Bird Monitoring in the Mojave Desert
on Lands Managed by the BLM, Ridgecrest Field Office

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In 2001, a Desert Monitoring Team was hired by the Bureau of Land Management (BLM) to monitor the effects of Off-Highway Vehicles (OHV's) on the desert ecosystem. One of their tasks was to develop a monitoring protocol for birds and to begin that monitoring. After a year of pilot surveys and adjustments, a final protocol was completed in the fall of 2002. The protocol calls for 3 surveys each year: a December survey in creosote scrub away from roads, a February survey in creosote scrub along roads, and a May survey in the same locations as the Deeember survey. Each survey lasts for 2 weeks and is comprised of 70 transects. Half of these transects are in OHV areas (the Jawbone-Butterbredt ACEC and the Rand Mountain/Freemont Valley Management Area) and the other half are in non-OHV areas (the Golden Valley Wilderness, the Grass Valley Wilderness and the Desert Tortoise Natural Area), which serve as controls.

This document is divided into the following parts:

Part I:

Protocol for Monitoring Winter and Spring Bird Populations in OHV Recreation Sites and Wilderness Areas on BLM Lands within the California Desert District, Ridgecrest Field Office

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1. Background

Concerns about the integrity of desert ecosystems and their resilience to human-induced disturbances lead to questions about the availability of suitable habitat for desert species of special concern. Resource managers in the Mojave and Sonoran deserts currently have little information on the effects of off-highway vehicle (OHV) recreation on wildlife during winter and spring months when OHV recreation is heaviest.

Many bird species of special concern in the BLM California Desert District are winter-resident raptors, as defined by Parker and Campbell (1986). Appendix A lists these raptor species as well as non-raptor species of concern in the California Desert District. Generally, winter-resident raptors range widely and at low densities across the Mojave and Sonoran deserts during the winter.

A long time-series of observations over large geographic areas may be necessary to detect trends in responses of raptor and non-raptor species of concern to OHV recreation or to resulting trail proliferation and habitat fragmentation. Monitoring for raptor species usually targets individual nesting sites, which may be vacant during the winter, or focuses on "hot spots" where raptors concentrate during migration. In winter months, wildlife biologists have used motor vehicles to count raptors on fences and power lines along roads (Parker and Campbell 1984, Knight and Kawashima 1993). Detecting impacts of OHV recreation on raptors and other bird species proves difficult because these standard census methods confound the effects of paved roads and power lines with OHV traffic patterns, trail networks, and resulting habitat fragmentation.

Smaller raptor species such as burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), and LeConte's thrasher (*Toxostoma lecontei*) are other species of concern. Their winter populations appear to be denser than large raptors. Little information is available about population trends of these species in California's desert ecosystems (see Laudenslayer et al. 1992), but burrowing owls and loggerhead shrikes in particular have declined markedly in many parts of their range over the last thirty years. LeConte's thrasher, confined to desert ecosystems, is particularly sensitive to human disturbances (Kristin Berry, USGS, Riverside CA, personal communication, 2001).

Initial counts of winter birds in the West Mojave Desert along transects reveal that most bird species are clustered and few in number, making measurements of their responses to OHV recreation difficult. More common passerine species, such as sage sparrow (*Amphispiza belli*) and common raven (*Corvus corax*), may serve as better indicators of habitat transformations in landscapes where OHV recreation takes place. Although these are not species of special concern, changes in these populations indicate the extent of habitat transformations in OHV recreation areas. The same habitat transformations are likely to effect species of special concern.

Fragmentation of chaparral habitat due to urbanizing development in San Diego County appears to lead to local extinctions of sedentary species such as coast race populations of sage sparrow and of California thrasher (*Toxostoma xxx*) (Soulé 1988). This pattern suggests that habitat fragmentation due to OHV recreation might have a negative effect on sage sparrow populations and LeConte's thrasher in California deserts. A contrasting pattern for common ravens has been investigated in the Mojave Desert. Knight et al. (1993) found that raven populations are lowest in parts of the Mojave Desert, such as Joshua Tree National Park, with little anthropogenic transformation. Populations of ravens respond favorably to linear landscape features such as transmission power lines and highways (Knight and Kawashima 1993), but no information is available about the specific effects of OHV trails and any resulting habitat fragmentation. It is especially important to quantify these effects with regard to ravens because ravens are known to prey on the federally listed endangered desert tortoise (*Gopherus agassizii*) (Boarman 1993).

This protocol addresses monitoring bird populations at three different times of the year: in December, in February, and in May. The surveys in December and May are done along identical randomly-selected transects to monitor both winter bird populations and breeding bird populations. The February survey also monitors winter bird populations; but it specifically monitors birds along OHV trails in OHV recreation areas and along trails that are no longer in use within non-OHV areas.

2. Management Questions

Data analysis from this monitoring protocol addresses the following management questions:

1. Is the total population of birds in landscapes with OHV recreation different from the total population of birds in landscapes where OHV recreation does not occur?
    A) In winter?
    B) In winter along trails?
    C) In spring during the breeding season?
2. Do the populations of single bird species in landscapes with OHV recreation differ from the populations of the same bird species in landscapes where OHV reereation does not occur?
    A) In winter?
    B) In winter along trails?
    C) In spring during the breeding season?
3. Do apparent responses to habitat in landscapes with OHV recreation differ among bird species?
    A) In winter?
    B) In winter along trails?
    C) In spring during the breeding season?
4. How do populations of bird species of special management concern change over time in landscapes with OHV recreation and without OHV recreation?
    A) In winter?
    B) In winter along trails?
    C) In spring during the breeding season?
5. Is the richness of bird species in landscapes with OHV recreation more or less than in landseapes without OHV recreation?
    A) In winter?
    B) In winter along trails?
    C) In spring during the breeding season?
6. Is the frequency of blacktail jackrabbits in landscapes with OHV recreation more or less than in landscapes without OHV recreation?
    A) In winter?
    B) In winter along trails?
    C) In spring during the breeding season?
7. How does the condition of vegetation (percent cover, species composition) relate to species richness of bird species, their populations, and jackrabbit populations?
    A) In winter?
    B) In winter along trails?
    C) In spring during the breeding season?

A related questions that this monitoring protocol does not address include:

1. As winter progresses, do the winter bird populations at OHV recreation sites decrease or increase more than do winter bird populations at sites with no OHV reereation?

BLM monitoring teams can answer this question by repeating the protocol identically in mid-February after the Presidents' Day holiday weekend. At that time, the last winter holiday weekend will have passed, but the spring migration will not have begun. Cumulative effects of winter OHV recreation on winter bird populations seasonally would be apparent if they indeed exist. Repeating the protocol in the late winter is not possible at this time.

The present survey protocols tracks relative abundance of bird species, including raptors, to see which species may be responding significantly to changes in the Mojave Desert landscape where OHV recreation occurs and does not occur.

3. Objectives

This monitoring protocol will:

1. Determine whether OHV recreation cumulatively affects populations of winter and spring bird species on BLM lands in the California Desert District,
2. Characterize population trends for winter and spring bird species in OHV reereation areas in contrast to trends for the same bird species in wilderness areas (reference condition), and
3. Increase confidence of statistical conclusions to support deeisions by BLM managers in response to thresholds of change.

4. Goals

This protocol provides high-quality information in a uniform, comparable format to BLM managers about the populations of winter bird species. In a given year, contrasts may appear among sites with different land management, i.e. areas with OHV recreation and contrasting trail-less areas of nearby wilderness areas. Over time (perhaps in five to ten years), trends may appear in winter bird populations at sites with and without OHV recreation.

5. Database Structure

Currently, there is a separate ACCESS database for each of the three surveys. However, each database has the same structure, and it might be worthwhile to combine them into a single database. The structure and elements of the database are discussed below.

Five data tables comprise the ACCESS database:

TRANSECTS: the data table with permanent information about transects originally proposed for inclusion in the winter bird population study.

VISITS: the data table with information on conditions (date, time, weather) for transects randomly selected for inclusion in the winter bird population study.

BIRD RECORDS: the data table with the species and number of individual birds sighted along randomly selected transects.

JACKRABBIT RECORDS: the data table with sightings of blacktail jackrabbits along randomly selected transects.

VEGETATION: the data table for information on the vegetation, and soils, if available, along transects randomly selected for the winter bird population study.

An additional database maintained by the Desert Monitoring Team in Ridgecrest, CA, contains information on species of concern for ecosystem management in the California deserts.

SPECIES OF CONCERN: the data table of incidental sightings of species of concern as field data gatherers walk or drive between transects. A supplementary document describes the protocol for recording species of concern sighted outside the context of a monitoring protocol in the areas when the protocol is conducted.

6. Data Elements

Data elements in each data table appear below under the heading of the respective data table. Where applicable, the format of data follows the Federal Information Processing Standards (FIPS).

TRANSECTS

Transect ID: An automatically assigned index number to identify a record for each transect originally considered for inclusion in this monitoring study.

Fed Agency: The FIPS number for the agency that creates these data. The FIPS number for the BLM is 1422.

State: The FIPS abbreviation for the state locale of a transect. The FIPS abbreviation for California is CA.

County: The FIPS numeric abbreviation for the county locale of a transect. Appendix B lists the FIPS numbers for California counties. In combination with the state abbreviation (see above), this gives a unique value.

HUC: The eight-digit Hydrologic Unit Code (HUC) for the transect locale. In many cases the HUCs have yet to be determined. Designations of HUCs for the California Desert District should be complete by the end of 2002.

US Cong Dist: The number of the Federal Congressional District for the transect locale. In combination with the state abbreviation (see above), this gives a unique value.

OHV Rec: A check mark indicates that OHV recreation occurs in the area. No check mark indicates that OHV recreation does not legally take place in the area, a designated wilderness area.

Area: Code name, comprised of management area abbreviation + the sampling region where the transect occurs. Table 1 lists the management areas and their abbreviations. Appendix C contains maps of the respective management areas.

Table 1. *Bureau of Land Management sites, their jurisdiction, area extent, and transects to sample.*

BLM Area	Code	Estimated Habitat Area (km^2)	Survey	Transects Sampled	Current Human-Mediated Disturbances
OHV Recreation Sites					
Jawbone-Butterbredt ACEC	JBA	35.4	Dec, May	13	cattle grazing, energy corridor, mining, OHV recreation, water supply, water supply corridor, wildlife viewing, wind energy production
	JB		Feb	12	
Rand Mountains Mgmt Area – North Region	RMA	49.5	Dec, May	22	OHV recreation
	RA		Feb	23	
Wildernesses and Preserves					
Desert Tortoise Natural Area	DTA	11.8	Dec, May	21	illegal OHV recreation, sheep grazing, wildlife viewing
	DT		Feb	26	
Golden Valley Wilderness	GVA	6.2	Dec, May	4	hunting, mining, sheep grazing
	GV		Feb	6	
Grass Valley Wilderness	GRA	32.6	Dec, May	11	designated OHV route, cattle grazing
	GR		Feb	4	

Transect: The alphanumeric code name for a transect, comprised of the area code + a serial transect number, e.g. RMA3 for the third transect in the Rand Mountains Management Area – North Section.

End 1 Elev: The elevation of the more westerly endpoint of a transect (m), obtained from the GPS unit, used as the BLM reference standard (Refer to Section 12 Required Equipment).

End 2 Elev: The elevation of the more easterly endpoint of a transect (m), obtained from the GPS unit, used as the BLM reference standard. (Refer to Section 12 Required Equipment).

Slope: Averaged percent slope for the 250-m transect as calculated from elevations for the transect end points listed in the previous two columns.

Aspect: The directional exposure of the terrain in which the transect is located (degrees from true north). Aspect as zero degrees denotes flat terrain.

Center Lat: North latitude of the center point of the transect (in decimalized degrees).

Center Lon: West longitude of the center point of the transect (in decimalized degrees).

UTM Ref: The reference baseline for Universal Transverse Mercator (UTM) metric locations.

Center E: UTM easting of the center point of the transect (m).

Center N: UTM easting of the center point of the transect (m).

Angle: Randomly selected angle for the transect (in degrees from true north).

End 1 E: UTM easting for end 1 of the transect (m).

End 1 N: UTM northing for end 1 of the transect (m).

End 2 E: UTM easting for end 2 of the transect (m).

End 2 N: UTM northing for end 2 of the transect (m).

Usable: Transects checked are assumed to be appropriate to the geographic and ecological constraints of the protocol (refer to Section 7) based on aerial photography, topographic maps, and/or ground truthing.

GT: Transects checked have been ground-truthed to determine if they are/are not appropriate to the geographic and ecological constraints of the protocol (refer to Section 7).

Used1: Transects checked are used in the pilot study for winter bird populations in creosote habitat, December 2001.

Extra1: Transects checked were sampled in Dec 2001, but are NOT used in the pilot study (refer to Section 8).

Notes: Reason(s) why the transect is not suitable for sampling.

VISITS

Visit ID: An automatically assigned index number for identifying a record for each visit to monitor a transect.

Transect: The alphanumeric code name for a transect, comprised of the area code + a serial transect number, e.g. RMA3 for the third transect in the Rand Mountains Management Area – North Section.

Season: Code for the timing of visit (December=1, February=2, May=3). Additional values may be added if field scientists collect data at other times.

Date: The date of the visit to the transect in FIPS format: YYYYMMDD, e.g. 20011202 for December 2, 2001.

Time: Start time of visit to the transect, expressed in FIPS format, e.g. 1452 is equivalent 2:52 PM.

Recorder: Two-character initials of the person who follows the transect line and records data about the transect visit and the birds and jackrabbits seen along the transect during the visit.

Observer: Two-character initials of the person who walks behind the recorder and weaves within 25 m on either side of the transect to search for birds and jackrabbits during the visit to the transect.

Start: The end point (End 1 or End 2) from which the recorder and the observer began their visit to the transect.

Finish E: The field reading for the UTM easting of the transect endpoint recorded on the day of the visit to the transect. This reading allows us to detect how far the recorder was off the pre-determined ending point of the transect after walking 250 m.

Finish N: The field reading for the UTM northing of the transect endpoint recorded on the day of the visit to the transect. This reading allows us to detect how far the recorder was off the pre-determined ending point of the transect after walking 250 m.

Sky: Acceptable sky conditions while monitoring a transect are: no cloud cover (0), < 50% cloud cover (1), ? 50% cloud cover (2), and 100% cloud cover (3). Unacceptable sky conditions for monitoring a transect are: foggy, smoky, drizzly, rainy, snowing, and hailing.

Wind: Wind speeds less than 40 km h^{-1} are acceptable conditions for transect monitoring. Wind speed classes follow Hammel (1996): less than 2 km h^{-1} still (0);2 to 5 km h^{-1} wind direction shown by smoke drift(1); 6 to 11 km h^{-1} wind felt on face and leaves rustle(2); 12 to 20 km h^{-1} leaves, small twigs in constant motion and light flag extended (3); 21 to 32 km h^{-1} raises dust and loose paper and small branches moved (4); 33 to 39 km: small trees in sway (5).

Temp: Air temperature in degrees Celsius at the closest NOAA Weather Station for the hourly reading closest to the time of the transect monitoring. Inyokern Airport, China Lake Naval Weapons Stations, Mojave, and Daggett Field / Barstow.

Birds: A check indicates that one or more birds were seen along the transect.

JRabbit: A check indicates that observers noted one or more blacktail jackrabbit (*Lepus californicus)* along the transect.

Comments: Note here birds and other vertebrates seen incidentally en route from the current transect to the next transect.

BIRD RECORDS

Bird ID: An automatically assigned index number for a record of one or more birds during a visit to monitor a transect.

Transect: The alphanumeric code name for a transect, as used in the data table TRANSECTS, along which a bird(s) was/were recorded while monitoring the transect.

Date: The date of the bird record at the transect, in FIPS format: YYYYMMDD, e.g. 20011202 for December 2, 2001.

Bird: The American Ornithologists Union (AOU) four-letter code for the bird species recorded.

Total: Total count of birds of one species (classified as adult or juvenile or as male or female, where applicable) at one time along the transect during a visit.

Age: For bird species with plumage differences between adult and juvenile birds during the winter, note whether the bird(s) has/have adult or juvenile plumage. Otherwise, leave this entry blank. Appendix A gives the species with these plumage differences.

Sex: For bird species with sexual dimorphism during the winter, note whether the bird(s) is/are male or female. Otherwise, leave this entry blank. Appendix A lists the species with these plumage differences.

Raptor: If the bird species defined as a raptor, check this column of the bird record. Appendix A notes which bird species are considered raptors in this monitoring project.

D Along: The distance along the transect from which the bird(s) in the current bird record were seen or heard. Values range from 0 to 250 m.

D Away: The perpendicular distance from the transect for the initial position of the bird(s) in the current bird record. Values range from 0 to 25 m.

D > 25: Check this data column if the bird species is recorded more than 25-m perpendicular distance from the transect (for non-raptor species) or more than 25-m perpendicular and end distance from the transect (for raptor species only).

Raptor > 250: Check this data column only for raptor bird species recorded more than 250 m perpendicular or end distance from the transect.

Flyover: Check this data column if the bird(s) was/were directly flying over the transect and not landing within 25 m of either side of the transect.

Bird Notes: Observations relating to the birds included in the bird record.

JACKRABBIT RECORDS

Jackrabbit ID: An automatically assigned index number for a record of one or more blacktail jackrabbits during a visit to monitor a transect.

Transect: The alphanumeric code name for a transect, as used in the data table TRANSECTS, along which a jackrabbit(s) was/were recorded while monitoring the transect.

Date: The date of the jackrabbit record at the transect, in FIPS format: YYYYMMDD, e.g. 20011202 for December 2, 2001.

Total: Total count of jackrabbits for each sighting along the transect.

D Along: The distance along the transect from which the jackrabbit(s) in the current record was/were seen or heard. Values range from 0 to 250 m.

D Away: The perpendicular distance from the transect for the initial position of the jackrabbit(s) in the current record. Values range from 0 to 25 m.

D > 25: Check this data column if the jackrabbit(s) is/are recorded more than 25 m perpendicular distance from the transect.

Jackrabbit Notes: Observations relating to the jackrabbit sightings.

VEGETATION

A separte document contains the standardized protocol for sampling vegetation used for the transect area. A USGS

plant ecologist, the California State Botanist, and the California State Ecologist adapt the protocols for monitoring vegetation recommended by the Interagency Technical Team (1996). In addition, as methods for monitoring biological soil crusts develop (Belnap et al. 2001), the Desert Monitoring Team will adopt additional data collection for monitoring soil crusts.

7. Study Sites

The study sites for long-term monitoring of winter and spring bird populations are on lands in the West Mojave Desert of southeastern California managed by the Ridgecrest BLM Field Office. Sites are stratified into two groups based on current BLM management: (1) areas with a network of trails or permitted open riding for OHV recreation and (2) areas within federally designated wilderness or preserve areas. OHV recreation sites in this study include: the designated OHV trail systems in the Jawbone-Butterbredt Area of Critical Environmental Concern (ACEC) and in the Rand Mountains Management Area. Wilderness and preserve areas included in this monitoring program are: Golden Valley and Grass Valley Wilderness Areas and the Desert Tortoise Natural Area.

A regional map showing the placement of these areas in the West Mojave Desert plus detailed maps of each area and its sampled transects are attached in Appendix C.

Wilderness areas, as designated in the 1994 California Desert Wilderness Act, are not pristine ecosystems unaffected currently or historically by human pursuits. Wilderness areas and the Desert Tortoise Natural Area contain trails used in the past for OHV recreation as well as for mining. Traditional uses such as grazing still continue in the wildernesses.

Characteristics of Habitats with Sample Transects
Potential sample transects are limited to sites with microphyllous scrub where creosote (*Larrea tridentata*) dominates the desert shrub canopy. This vegetation type is equivalent to the *Larrea tridentata* shrubland alliances of Thomas and Keeler-Wolf (unpublished manuscript 2000), with occasional significant cover from (*Ambrosia dumosa*) and (*Encelia farinosa*). Transect sites with more than one Joshua tree (*Yucca brevifolia*), or with any plants of Mohave yucca (*Y. schidigera*), smoketree (*Psorothamnus spinosus*), and blackbrush (*Coleogyne ramosissima*) are omitted from consideration. These aforementioned plant species create habitat for bird species likely to be significantly different from habitat where creosote is the dominant shrub species. Transects with surface areas covered with more than ten percent boulders, rock, cobble, or talus are also not sampled. All potential transects lie outside riparian areas or cross these areas obliquely and occur within uniform habitat blocks of at least 55 ha.

All transects also have the following features:

Elevation between 600 m and 1300 m elevation
Slopes of 10 percent or less
Situated 500 m or more from private property boundaries, wilderness boundaries, paved roads, dirt roads constructed for non-OHV recreation purposes (home access, ranching, and mining), aqueduct pipelines, utility transmission lines, and accompanying utility access roads.

Table 1 provides details of the habitat land area and the number of potential transects and actual transects chosen from each land area for this monitoring protocol.

Wilderness areas serve as "control" or "reference" sites by which the BLM may compare the effects of land management for OHV recreation with the effects of nearby sites that have no OHV recreation. "Cross-sectional" inferences may be made on an annual basis between the two strata, especially with respect to whether the environmental characteristics of the OHV recreation sites differ significantly from those same characteristics in non-OHV recreation sites. Tests of significances are difficult because human disturbances are numerous and not identical from one transect to the next.

It is important to understand the trajectory that individual areas (as represented by transects) have in a time series.

Where within-year comparisons between sets of transects are possibly obscured by multiple and non-overlapping human-mediated disturbances, trend data for each transect will show where populations of winter bird species are faring well or not so well. Population Trends in non-OHV recreation areas and OHV recreation areas may proceed in divergent directions. Observing these trends will lead to corrections in ecosystem management, especially when trends run counter to the intentions of land management.

8. Sample Size

In December 2001, the Desert Monitoring Team sampled 35 transects each in current OHV recreation areas and in wilderness areas. In February 2002, the Team sampled 39 transects along trails in OHV areas and 38 transects along trails in non-OHV areas. In May of 2002, the Team sampled 34 points in areas with current OHV recreation and 16 points in areas closed to OHVrecreation. This round of surveys will assist in determining the *a priori* total sample size to be used in surveys in subsequent years. The equation to estimate statistical power of the total sample size of both stratifications is:

$$n = 2(t_? + t_?)^2 S^2 /?^2 \quad (1)$$

where:
n = sample size
? = Type-I error level
? = Type-II error level
$t_?$ = Student t-value associated with ? for infinite degrees of freedom
$t_?$ = Student t-value associated with ? for infinite degrees of freedom
S^2= variance of the differences between measurements
? = absolute effect size.

Initial statistical assumptions for this protocol are: $t_{a=0.10} = 2.33$
$t_{?=0.10} = 1.64$
and the minimum detectable effect at a 20 percent increase or decrease (i.e., the value of ?). The variables examined for statistical power are: total birds, total raptor birds, total non-raptor birds, total ravens, and total sage sparrows.

These samples combined will provide a variance (S^2), the larger sample mean of the two stratifications times the minimum detectable change (in this case 40 percent) squared will yield the absolute effect size (?). Then, equation (1) can reckon the minimum sample size. After the first round of transect monitoring is completed, and if the minimum sample size is less than the number of transects sampled, then no additional transects need be sampled. If the minimum sample size is greater than the number of transects thus far sampled, then the monitoring team would randomly and iteratively survey additional transects until the number of transects sampled equaled or slightly exceeded the minimum sample size.

Finally, optimal allocation of transects for the sample size obtained from equation (1) adjusts the number of transects from each area sample for each of the two stratifications (Bern et al. 1999). The optimal allocation comes from:

$$n_h = n(N_h s_h / ?N_h s_h) \quad (2)$$

where:

n_h = the total sample size as determined from equation (1)

N_h= the acres/hectares of the stratum considered

s_h= the observed standard deviation of stratum h

$?N_h s_h$ = the sum of the products of acres for a stratum and the observed variance of that stratum.

9. Process for Random Selection of Transects

Point counts in the Mojave Desert in the winter may tally zero birds because birds may be silent, thinly dispersed, and clustered as flocks. Zero counts from points may truncate an otherwise normally distributed bird count. Permanent line transects defined by UTM coordinates increase the likelihood of seeing at least one bird per sample. All study sites (see Table 1) consist of 250 m diameter circles laid out on a 750 m grid so that circles are 500 m apart. Each circle contains a 250-m transect through its midpoint. The angle from true north for each transect within a circle comes from a series of true random numbers generated from www.random.org. The 500-m intervals between circles assure that samples of bird populations from each transect are independent.

To avoid disturbing soils within federally designated wildernesses, the endpoints of transects are not marked with rebar monuments. With each visit to a transect, a GPS unit relocates a transect start point and a compass orients the monitoring party toward the transect end point.

Transects are numbered consecutively from north to south, then west to east. Random selection of sample transects from OHV recreation sites and from wilderness/preserve sites uses a random number table from www.random.org with a range of numbers between 1 and the total number of potential transects for each stratum.

Transects are visited prior to sampling to validate that they meet the qualifications for inclusion in the sample.

10. Methods for Data Collection Along Transects

Constraints to Data Collection
Visits to transects begin between one-half hour after sunrise and one-half hour before sunset. Weather conditions may limit transect visits. High winds characterize winter months in the western Mojave Desert (Heindel 2000) and limit observers' ability to see and hear birds. If winds exceed 40 km h^{-1} (25 miles per hour) or if it is raining, snowing, or hailing, no data are collected.

Most OHV recreation occurs on Saturdays and Sundays as well as on Fridays and Mondays during holiday weekends. Therefore, sampling in the OHV recreation areas occurs on other days so that data collection and OHV recreation are less likely to overlap. Noise and physical disturbance of birds on days with OHV use may prevent field people from noting birds that may be using the habitat around each transect. If OHV recreation is occurring at the same time as monitoring, field people make a note of the activity on the field data sheet for the transect from which they hear or see OHV recreation.

Wilderness and natural areas are sampled during any day of the week.

Determining a Transect Circuit
The order of visits to a set of randomly selected transects is not random. The circuit of transects sampled in one day minimizes travel time between transects and takes advantage of the position of the sun for best observing birds. In general, close-by transects are monitored in the same day whenever possible. Appendix D lists current transect circuits. Replicability of the transect circuit ensures that the conditions for sampling a transect remain close from one year to the next.

Field Methods
Two people monitor each transect: a recorder and an observer. The people first approach the transect start point from a direction that does not cross the path of the transect. At the designated start point for the transect, the recorder takes notes on a new data sheet about current weather conditions, elevation (if the site has not been visited before), and start time for traversing the transect. Appendix E contains a blank copy of the datasheet. Before starting, both the observer and the recorder take time to catch their breath if they have previously have been walking on steep terrain toward the transect.

Noise from walking may make listening for bird sounds difficult at times. Therefore, stops occur along transects. At

50-m intervals along the transect, beginning at 0 m, the two people wait 30 to 60 seconds to listen and watch for birds. Birds detected by sight or sound within 25 m of either side of the transect are counted and noted on the datasheet.

Between the 50-m stop intervals, the recorder holds the GPS unit and a compass and walks directly toward the opposite transect endpoint. The recorder also tracks the time to complete walking the transect in ten minutes. Appendix E shows timing guidelines that the observer follows in stopping and starting at 50 meter intervals along the transect. At the same time, the observer walks behind the recorder and weaves across the transect width (up to 25 m on either side of the transect) looking for birds within the transect that the recorder may not see from the transect line. When the recorder stops, the observer also stops so that both people can listen for bird sounds and look for birds. The recorder records all information on birds seen, including the distance of birds from the transect line and his or her own distance along the transect line (both by comparison with the observer). The observer remains behind the recorder until the recorder finishes walking along the transect and announces that ten minutes have passed. At this point the recorder catches up to the observer and records the UTM location and elevation of the finish point as well as data for any birds the observer may have seen.

Tallies of bird species and their numbers are limited to ten minutes for each 250-m transect sampled. If ten minutes have passed and the recorder has not completed walking the transect, the recorder notes the distance traveled from the point of origin. If the end of the transect is reached and ten minutes have not yet elapsed, the observer may walk back along the transect to the previous stop (at transect point=200 m) to continue looking for new bird observations. Once, ten minutes have passed, observing birds is halted.

For certain bird species, the recorder or observer should note differences in sex, e.g., house finches (*Carpadocus mexicanus*), or age, e.g., white-crowned sparrows (*Zonotrichia xxx*). Refer to Appendix B to see which species show sex and age differences during the early winter.

Birds are grouped into raptors and non-raptors, as defined by Parker and Campbell (1984). Appendix B shows which common birds in the West Mojave Desert are classified as raptors. Observations of raptor and non-raptor bird species are recorded differently, as described below.

Non-Raptor Bird Species
Record non-raptor birds found only within the 50m x 250m transect plot. Non-raptor birds observed outside the plot and beyond the endpoints of the transect are noted in the column designated for "Comments" on the field sheet.

Non-raptor birds first seen in flight coming from outside 25 m into the transect plot are designated as "flyovers." Flyovers also include birds from outside the transect plot that land inside the transect plot during the transect visit. The goal is to note bird positions before people arrive. Likewise, if a bird flies up from within the transect plot and lands outside the 25-m distance from the transect line, the bird is not considered a flyover but is, instead, counted as a sighting within the transect. Flyover non-raptor birds are tallied separately. Non-raptor bird species sighted beyond 25 m of either side of the transect line are also tallied separately.

Raptor Bird Species
The criteria for searching for raptor bird species are somewhat different from those for non-raptor bird species. Raptor birds observed outside the plot and beyond the endpoints of the transect should be noted in the appropriate column for distance class from the transect. Thus the space that is within 25 m of the transect includes a 25-m radius from each endpoint of the transect. The area surrounded by the 25-m endpoint radius is not part of the area from which non-raptor species are tallied by distance class.

Also, because many raptors fly over wide distances, no distinction is made between flyover and non-flyover raptors. Instead, three categories of raptors are tallied: raptors (in the air or not) occurring within 25 m on either side of the transect line; raptors > 25 m and ? 250 m from the transect line; and raptors > 250 m from either side of the transect line. In each instance, the area from the endpoint radius is also included.

Unidentified Bird Species
Any bird, raptor or non-raptor, not identifiable is listed as "unidentified." Unidentified birds are part of the number of total birds, total raptor birds, and total non-raptor birds. They do not contribute to counts for species richness.

Blacktail Jackrabbits

Many mammals are not apparent in the Mojave Desert in December. One frequent herbivore mammal still remaining active is the blacktail jackrabbit (*Lepus californicus*). Counts of jackrabbits flushed inside the transect plot are tallied as well.

Step-by-Step Transect Sampling

This topic heading describes the order of steps for sampling transects for winter and spring birds.

1. Follow the pre-determined circuit for monitoring transects listed in Appendix D to reach each transect. Be careful not to cross a transect before arriving at the transect endpoint chosen as the start point for monitoring.
2. Use a GPS unit to locate the start point to begin transect monitoring.
3. Arrive quietly at the start point and wait one minute or more to catch your breath.
4. Fill in information about the recorder, observer, date, time, and start point of the transect visit.
5. Estimate wind speed in km hr^{-1} using wind speed classes (Hamel et al. 1996).
6. Describe sky and weather conditions by cloud cover classes described in Section 6 under VISITS.
7. Stop transect monitoring whenever it is raining/snowing or whenever the wind exceeds 40 km hr^{-1}.
8. Resume monitoring if the rain or snow stops or if the wind beeomes calmer to within the acceptable limits established in Section 6. If the inclement conditions persist, no more monitoring may be possible for the day.
9. Note the start time to count birds for each transect.
10. Remain at the start point (0 m) of the transect for 30 to 60 seconds.
11. At the start point, listen and watch for all non-raptor birds located both within 25 m and greater than 25 m on either side of the transect and in the direction for walking. Use separate columns designated for each distance class. Do not record non-raptor birds heard or seen behind you at the start point.
12. Also at the start point, listen and watch for raptor birds located within a full 360° radius of 25 m, within radii of 25 m and 250 m, and beyond a full radius of 250 m.
13. Begin traversing the transect in increments of 50 m. The person designated as the observer takes the lead; the recorder follows behind. Guided by the GPS unit and compass, the observer follows the transect line directly toward the opposite endpoint while the recorder walks irregularly ("weaving") to find birds across the 50-m total width of the transect plot. Being careful not to double-count birds, count new non-raptor birds seen and heard in a 360° radius and within the transect length and within 25 m of each side of the transect. Count all new raptors as at the start point. Walking time between 50-m intervals may differ considerably as needed for identifying birds.
14. At incremental distances of 50 m that are not transect endpoints, stop for at least 30 seconds but no more than 60 seconds to count new birds in front or in back of you. Non-raptor birds sighted at any time beyond the endpoints of the transect line are never tallied in counts but are noted in the comments column of the field datasheet.
15. Note the distance along the transect and the distance perpendicular from the transeet for individual birds, or (only in the case of raptors) the radial distance class from a transect endpoint or the transect plot boundaries. Note an average distance for a flock of birds. For loosely flocking horned larks especially, an average distance of a flock may be difficult to ascertain. In these instances, estimate distances of smaller cohorts of birds as multiple entries for the same species.
16. Listen and watch for any raptor species overhead or beyond 25 m from the transect.
17. Note separately all non-raptor birds that fly over. A flyover is a non-raptor bird species that is originally seen in flight beyond the transect plot (>25 m from either side of the transect line). Even if the bird eventually lands within the transect, it is still counted as a flyover.
18. Record numbers of birds (raptors and non-raptors) by species, age class (adult or immature, where possible), and sex (where possible), and distance class from the transect line (? 25 m, > 25 m, > 250 m, flyover) on field sheets in the appropriate categories. Use the AOU abbreviation codes for bird species (refer to Appendix B).
19. Proceed on foot to the next stop, stopping as needed to observe birds.
20. Note and record birds as in steps 14 through 18.
21. Repeat each walk count (between stops) and each stop count (at each 50-m interval). The final stop count is at 250 m, the final walk count ends at 250 m. Do not count non-raptor birds seen or heard beyond the 250-m transect end point. Count raptor birds if seen beyond the 250-m transect end point.

22. Stop counting after 10 minutes have passed, even you have not traversed the entire transect.
23. If you reach the finish point at 250 m, turn around to observe non-raptor birds within the transect plot. Do not count non-raptor birds behind you. Count raptors as you did at the start point.
24. Stop counting once 10 minutes have elapsed.
25. The observer should not move from the finish point until the recorder has noted the UTM location and elevation of the finish point. Once the transect is finished, the observer relates all his/her bird observations to the recorder. Observations may have already been relayed to the recorder quietly during the transect walk.
26. Proceed to the next transect by way of the prescribed route.

Data Collection for Vegetation
Each spring following the winter bird monitoring, a botanist monitor measures the composition of vegetation along each 250-m transect, by randomly sampling ten 5-m segments of vegetation. A true random number series from www.random.org ranging from 1 to 100 will select the nth 5-m segment for sampling. If the same number appears twice or more often in a series, that repeated number is then skipped.

The following data are collected from each transect:

a. Transect number
b. Date sampled
c. Segment number
d. Transect length of total shrub cover
e. Transect length by each shrub species
f. Transect length of total forb cover
g. Species list of all shrubs
h. Species list of all forbs
i. Species list of all grasses
j. Total species richness
k. Length of OHV trail(s)
l. Length of bare rock (widest length ? 4 in)
m. Length of surface covered with microbiotic crusts or bare soil
n. Length of wash

These data comprise a vegetation monitoring protocol and permit correlation between plant species composition and plant species diversity.

11. Field Training

An instructor in field identification of Mojave Desert bird species familiarizes the field crew each November with field marks, vocalizations, and AOU name abbreviations of winter birds. Appendix A lists these species. Training will consist of field study in areas close to transects and with similar vegetation. Twenty-hours of field practice is the minimum requirement for inclusion in the monitoring team for winter birds. Wherever possible, the instructor will participate in the data collection with another field crew member to collect data.

The botanist in charge of monitoring the status of vegetation in the transect plot will have previous training in identifying desert shrub species on the basis of both floral morphology and non-floral traits such as branching pattern, scent, leaf venation, and pubescence. The botanist will have field experience identifying grass and forb species by floral morphology for documenting plants occurring in transect plots.

In addition, the botanist will be trained in photographic documentation for repeated views of a sight over time.

12. List of Required Equipment

Bird Observation

Binoculars (with magnification and view width equivalent at least to 8 x 40)
Compass with declination and sighting capabilities
Data sheets (refer to Appendix E)
GPS unit (Trimble Geoexplorer unit)
Mechanical pencils
Pens
Map of transects
Transect information (endpoint locations)
Digital watch with stopwatch
AOU bird code list
Extra batteries for GPS

Plant Identification and Measurement
Digital camera
Tripod
GPS unit
Plant press
Field sheets
Mechanical pencils
Metric tape (100 m)
Plant field guides

Safety Gear
First-aid kit
Water (at least one gallon)

13. Data Entry

Presently, data are tallied on field sheets, not directly into formatted electronic programs for downloading later. At the end of each day, the Desert Monitoring Team Leader or other person designated by the Team Leader will collect sheets to check that all information is completely and correctly filled out on the sheets. If unusual numbers or species of birds appear, the checker may require a write-up from the field crew about the bird sighting for inclusion in the comments section of the BIRD RECORDS data table. The checker will also fill in weather data (temperature and wind speed) based on the closest NOAA weather station (located at China Lake, Inyokern, Mojave, or Dagget Field/Barstow).

A designated Monitoring Team member will input data into respective Access data tables. After the Team member finishes data entry for fieldwork from one week, the Team Leader reviews the data for completeness and accuracy.

14. Information Compilation

The State Ecologist compiles and analyzes the data from this monitoring study for annual reporting to the Director of the BLM California State Office, the OHMVR Division, the OHMVR Commission, and the general public. The annual analysis after multiple years may provide insights into trends of winter bird and plant populations. If these data are useful to managers and biologists, the State Ecologist and other participants may produce technical or scientific articles in peer-reviewed journals.

15. Data Management

Data management for this survey follows federal guidelines for data management (FIPS) standards for data

availability, data quality control, and data quality assurance.

The authoritative database resides in the BLM Ridgecrest Field Office with the Desert Monitoring Team. The Team Leader is responsible for keeping the data current, complete, and accurate. Each month, after the inclusion of new data, the Team Leader sends the entire database electronically to the BLM California State Ecologist in Sacramento. The State Ecologist reviews the data to assure that data coming from a source or several sources is uniform in format and comparable for statistical analyses with other data sets.

16. Relevant Statistical Tests and Parameters

The monitoring protocols permit different kinds of statistical comparisons between current-year populations of birds on lands with different management, between years of like categories of bird populations from lands with identical management, and between populations of bird groups and vegetation traits. T-tests, analysis of variance and co-variance, multivariate statistical analysis, and non-parametric statistical analyses are likely statistical test methods for analyzing monitoring data established under this protocol.

If datasets do not have normal distributions, non-parametric statistical tests are used to detect confirmation or rejection of monitoring hypotheses. These tests may be the only statistical tests appropriate in cross-sectional statistical comparisons. With the accumulation multiple annual reports, time-series data may be analyzed for trends in combination with any environmental factors, such as rainfall or biological lag effects.

Procedures for parametric analyses rely on standard statistical tests for analysis in wildlife biology studies, e.g. Nur et al. (1999), and in plant ecology studies, e.g., Bern et al. (1999), provide additional statistical tests for consideration.

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Table 2

Winter bird species found in West Mojave Desert creosote plant alliances, arranged in taxonomic order and AOU code name, with information on management status, designation as raptor species, sexual dimorphism in plumage (winter only), and differences in winter plumages of adults and juveniles

AOU Common Name	IBIS Scientific Nams	AOU Code	Special Status†	Raptor Species	Sexual Dimorphism	Adult/ Juvenile
northern harrier	*Buteo regalis*	**NOHA**		?	?	?
sharp-shinned hawk		SSHA		?		?
Cooper's hawk		COHA		?		?
red-tailed hawk		**RTHA**		?		
ferruginous hawk		FEHA	?	?		?
rough-legged hawk		RLHA		?		?
golden eagle		GOEA	?	?		?
American kestrel		AMKE		?	?	
merlin		MERL		?	?	
peregrine falcon		PEFA	?	?		?
prairie falcon		**PRFA**	?	?		
chukar (I)		CHUK				
Gambel's quail (I)		GAQU			?	
California quail		CAQU			?	
killdeer		KILL				
rock dove		RODO				
mourning dove		**MODO**				
greater roadrunner		GRRO	?			
barn owl		BNOW		?		
great horned owl		GHOW		?		
burrowing owl		**BUOW**	?	?		
long-eared owl		LEOW		?		
Anna's hummingbird		ANHU			?	
ladder-backed woodpecker		LBWO			?	
northern flicker		**NOFL**			?	
Say's phoebe		**SAPH**				
loggerhead shrike		**LOSH**	?			
common raven		**CORA**				
horned lark		**HOLA**				
verdin		**VERD**			?	
cactus wren		**CACR**				
rock wren		**ROWR**				
Bewick's wren		BEWR				
ruby-crowned kinglet		RCKI			?	
mountain bluebird		MOBL			?	
western bluebird		WEBL			?	
Townsend's solitaire		TOSO				
hermit thrush		HETH				
American robin		AMRO				
northern mockingbird		NOMO				
sage thrasher		SATH				
California thrasher		**CATH**	?			
crissal thrasher		**CRTH**	?			
Leconte's thrasher		**LCTH**	?			
European starling (I)		EUST				
American pipit		AMPI				

cedar waxwing		CEWA				
orange-crowned warbler		OCWA				
yellow-rumped warbler		**UYRW**				
spotted towhee		SPTO				
Brewer's sparrow		BRSP				
chipping sparrow		CHSP				?
vesper sparrow		VESP				?
black-throated sparrow		**BTSP**				
sage sparrow		**SAGS**				
savannah sparrow		SAVS				
song sparrow		SOSP				
white-crowned sparrow		**WCSP**				?
golden-crowned sparrow		GCSP				?
western meadowlark		WEME				
Brewer's blackbird		BRBL			?	
great-tailed grackle		GTGR			?	
brown-headed cowbird		BHCO			?	
house finch		**HOFI**			?	
lesser goldfinch		LEGO				
American goldfinch		AMGO				
house sparrow (I)		HOSP			?	
unknown bird species		UNKN				

† threatened and endangered species or species of concern, designated federally or by the state of California

Part II

Results of the December 2002 Survey are summarized in the following table. There are several conclusions which jump out from this data.

Horned larks and sage sparrows are by far the most common birds in creosote scrub in the area during the winter. Their numbers are at least an order of magnitude greater than the numbers for any other species, and these two species made up 81% of all birds seen on the transects.

Common ravens, LeConte's thrashers, and verdins comprise a second group of species, not as common as the first two species but certainly not uncommon. These 3 species, in addition to the first two made up 98% of all birds seen on the transects. The other species in the following table are present (as well as certain birds not on the list), but their densities are so low that any meaningful monitoring of their populations would be extremely difficult.

Preliminary Results from December 2002 Bird Survey

	All Birds						Birds on Transects						Within 25 meters					
	Golden Valley	Grass Valley	Desert Tortoise NA	Jawbone ACEC	Rand Mountains	All Areas	Golden Valley	Grass Valley	Desert Tortoise NA	Jawbone ACEC	Rand Mountains	All Areas	Golden Valley	Grass Valley	Desert Tortoise NA	Jawbone ACEC	Rand Mountains	All Areas
Number of Transects	4	11	21	13	22	71	4	11	21	13	22	71	4	11	21	13	22	71
Species																		
American Kestrel	1		1			1	1		1			1						
Black-Throated Sparrow			1			1												
Blue-Gray Gnatcatcher					1	1					1	1						
Burrowing Owl	1		1			1	1		1			1						
Cactus Wren		1	1			1		1	1			1						
Common Raven	1	1	1	1	1	4	1	1	1	1	1	4						
Horned Lark	19	81	134	25	64	323	5	25	31	7	13	81		2	6	4	12	24
House Finch			2			2												
Ladder-backed Woodpecker	2					2												
LeConte's Thrasher	3	4	2	7	16	32	3	7	12			22		1	1			2
Loggerhead Shrike	1					1	1					1						
Red-Tailed Hawk	1					1	1					1						
Rock Wren	1	2	3	6		12		1	1			2						
Sage Sparrow	10	24	93	63	42	232	4	21	16	16	57	114	3	12	6	8	29	58
Say's Phoebe	1					1	1					1						
Verdin	2	2	3	2	9	18	1	5	6	1	4	17						

Part III

Results of the February 2003 survey are summarized in the following table. As might be expected, the results are very similar to the results for the December survey. Sage sparrows and horned larks were again the most numerous birds. Ravens and verdins were again seen fairly regularly. More house finches and rock wrens were seen in February, and fewer LeConte's thrasers; but these differences are probably not significant.

A flock of white-crowned sparrows and a chukar were seen during the survey (two bird species that were not seen in December). Although they were not seen in December, they were certainly present then.

In addition to the bird species in the table below, black-throated sparrows were seen the previous year during the pilot study done in February of 2002.

Preliminary Results from February 2003 Bird Survey

	All Birds			Birds on Transects			Within 25 m		
Species	Golden Valley	Grass Valley	Desert Tortoise NA	Jawbone ACEC	Rand Mountains	All Areas	Golden Valley	Grass Valley	Desert Tortoise NA	Jawbone ACEC	Rand Mountains	All Areas	Golden Valley	Grass Valley	Desert Tortoise NA	Jawbone ACEC	Rand Mountains	All Areas
Number of Transects:	6	4	26	12	23	71	6	4	26	12	23	71	6	4	26	12	23	71
Burrowing Owl			1	1					1	1								
Chukar						1												
Common Raven	2	2	6	7	17		1	2	5	8			1			1		
Horned Lark	37	98	100	17	88	340	19	1	35	14	59	128						
House Finch	2		4	1	7		2		1	1	4							
LeConte's Thrasher	3		1	1	5		1				1							
Loggerhead Shrike	1		1	1			1		1	1			3					
Rock Wren	1		1				17		19				7		7			
Sage Sparrow	12	26	41	52	21	152	7	16	28	42	17	110	3	8	15	12	6	44
Say's Phoebe			1	1					1	1								
Sparrow sp.	4	3	4	11			4	3	3	10			3	3	6			
Verdin	3		3	2	8		1		2	2	5							
White-Crowned Sparrow			8			8			8			8						

Part IV

Results of the May 2003 survey are summarized in the following table. Please note that the format of this table is slightly different from the previous two results tables: the two sets of numbers represent "All Birds on Transects" and "Birds within 25 m (of transects)". Unlike our procedure during the two winter bird surveys, we did not keep a tally of all the birds seen or heard while walking between transects.

Again, sage sparrows and horned larks made up most (86%) of the birds seen on transects. Ravens and black-throated sparrows together accounted for an additional 8% of all birds seen on transects. No other species accounted for more than 1% of all the birds seen.

The previous year (May of 2002) the following birds were seen as well: barn swallow, cliff swallow, orange-crowned warbler, and Vaux's swift.

Results from May 2003 Bird Survey

	All Birds on Transects						Birds within 25 m					
Species	Golden	V. Grass	V. DTNA	Jawbone	Rands	All Areas	Golden	V. Grass	V. DTNA	Jawbone	Rands	All Areas
Ash-Throated Flycatcher	*	1	*	1								
Bewick's Wren	*											
Black-Headed Grosbeak	*											
Black-Throated Sparrow	3	12	4	7	26		2	3	2	7		
Cactus Wren	1		1	2		1						
Common Raven	*	23	12	6	41		3		3			
Costa's Hummingbird				1	1							
Flycatcher sp.	1	1				1						
Horned Lark	39	36	72	188	93	428	4	3	9	27	10	53
Hummingbird sp.	1		1	2		1						
LeConte's Thrasher	2	1	1	*	1	5						
Lesser Nighthawk	1	*		2	3	1		2	3			
Loggerhead Shrike							2					2
MacGillivray's Warbler	*											
Mourning Dove	2	1	1		2	6		1		1		
Northern Mockingbird	*											
Phainopepla	*											
Red-Tailed Hawk	*	*										
Rock Wren	1	3	*	4								
Sage Sparrow	4	31	81	65	69	250	2	17	37	26	21	103
Say's Phoebe	*											
Sparrow sp.	3		2	5		1		1				
Townsend's Warbler	1			1		1		1				
Turkey Vulture	*											
Verdin	2	*	2	4		2		1	3			
Vesper Sparrow	5			5		5		5				
Western Kingbird	*	1				1						
Western Tanager	1	*	*	1		1		1				
Western Meadowlark	*											
White-Crowned Sparrow	*											
Wilson's Warbler	*											
Number of Transects:	4	9	17	13	22	65	4	9	17	13	22	65

* Indicates birds that were seen in that management area during the survey, but were not seen on any transects.

Part V

Raw Data

Transects for Bird Monitoring away from OHV trails/roads during the Winter and Spring on BLM lands managed by the Ridgecrest Field Office

These transects were established and monitored for the first time in 2001-2002.

Management Area	Transect	Start E	Start N	Start Angle
Desert Tortoise (All)	DTA12	417124	3897013	264
Desert Tortoise (All)	DTA16	417875	3897746	272
Desert Tortoise (All)	DTA17	417875	3896250	270
Desert Tortoise (All)	DTA19	418593	3897666	312
Desert Tortoise (All)	DTA24	420125	3901498	271
Desert Tortoise (All)	DTA31	422366	3897797	248
Desert Tortoise (All)	DTA37	414746	3894625	2
Desert Tortoise (All)	DTA39	415439	3898391	29
Desert Tortoise (All)	DTA43	416374	3899267	262
Desert Tortoise (All)	DTA45	416365	3897799	247
Desert Tortoise (All)	DTA48	417118	3899291	251
Desert Tortoise (All)	DTA51	416882	3895459	71
Desert Tortoise (All)	DTA54	417869	3898539	252
Desert Tortoise (All)	DTA63	418513	3894626	354
Desert Tortoise (All)	DTA65	419354	3899930	304
Desert Tortoise (All)	DTA66	419355	3896932	303
Desert Tortoise (All)	DTA69	420125	3900759	266
Desert Tortoise (All)	DTA71	419991	3898375	4
Desert Tortoise (All)	DTA73	419941	3896890	28
Desert Tortoise (All)	DTA75	420849	3902173	308
Desert Tortoise (All)	DTA79	420699	3899136	24
Grass Valley (All)	GRA04	468846	3910420	310
Grass Valley (All)	GRA05	468801	3905886	336
Grass Valley (All)	GRA101	465870	3909716	286
Grass Valley (All)	GRA102	465870	3908966	286
Grass Valley (All)	GRA13	469476	3902127	11
Grass Valley (All)	GRA26	471122	3903026	258
Grass Valley (All)	GRA78	466621	3906780	256
Grass Valley (All)	GRA84	466602	3904428	305
Grass Valley (All)	GRA85	465872	3903722	283
Grass Valley (All)	GRA91	468123	3911226	281
Grass Valley (All)	GRA93	468854	3911320	236
Golden Valley (All)	GVA01	452901	3914923	52
Golden Valley (All)	GVA09	454413	3916410	44
Golden Valley (All)	GVA14	455265	3916376	353
Golden Valley (All)	GVA15	455366	3915703	292
Jawbone ACEC North	JBA05	408843	3930666	312
Jawbone ACEC North	JBA09	409609	3932189	299
Jawbone ACEC North	JBA16	410352	3933072	235
Jawbone ACEC North	JBA28	411121	3932968	285
Jawbone ACEC North	JBA29	411123	3932274	259
Jawbone ACEC North	JBA32	411123	3930020	261
Jawbone ACEC North	JBA33	411111	3929193	297
Jawbone ACEC North	JBA47	411799	3928385	337

Jawbone ACEC North	JBA57	412509	3929875	356
Jawbone ACEC North	JBA60	413318	3934395	327
Jawbone ACEC North	JBA62	413233	3931376	8
Jawbone ACEC North	JBA65	413955	3935133	21
Jawbone ACEC North	JBA66	414125	3934504	268
Western Rands ACEC	RAA06	424545	3908883	339
Western Rands ACEC	RAA09	424459	3906632	19
Western Rands ACEC	RAA19	426116	3908953	292
Western Rands ACEC	RAA27	428297	3911134	338
Western Rands ACEC	RAA28	428989	3911125	5
Western Rands ACEC	RAA29	428876	3910487	84
Western Rands ACEC	RAA33	429809	3911140	332
Western Rands ACEC	RAA34	429709	3910382	19
Fremont Valley	RAA47	431159	3912665	47
Fremont Valley	RAA54	432028	3911128	347
Fremont Valley	RAA58	432782	3911879	345
Fremont Valley	RAA59	433609	3918689	299
Fremont Valley	RAA60	433562	3917892	330
Fremont Valley	RAA61	433600	3917325	233
Fremont Valley	RAA64	434375	3919502	269
Fremont Valley	RAA67	434270	3917127	351
Fremont Valley	RAA74	434880	3918716	74
Fremont Valley	RAA75	435091	3917335	227
Fremont Valley	RAA76	434907	3916416	48
Fremont Valley	RAA80	435835	3917159	317
Fremont Valley	RAA81	435711	3916381	18
Fremont Valley	RAA84	435728	3913377	10

Specific visits to the above transects during December of 2001, December of 2002 and May of 2003:
Date Transect Time Recorder Observer Sky Wind Temp Birds 20011204 RAA09 1419 Weigand, J Keith, K 4 13.3 Yes 20011204 RAA64 752 Weigand, J Keith, K 0 1 6.1 Yes 20011204 RAA59 826 Weigand, J Keith, K 0 1 8.9 Yes 20011204 RAA61 1002 Weigand, J Keith, K 0 1 10 Yes 20011204 RAA47 1142 Weigand, J Keith, K 0 1 11.7 No 20011204 RAA58 1200 Weigand, J Keith, K 0 4 11.7 Yes 20011204 RAA34 1317 Weigand, J Keith, K 0 5 12.2 No 20011207 JBA47 1206 Keith, K Weigand, J 0 5 16 Yes 20011207 JBA32 1122 Keith, K Weigand, J 0 5 16 No 20011207 JBA29 1041 Keith, K Weigand, J 0 5 16 No 20011207 JBA09 1539 Keith, K Weigand, J 0 2 19 Yes 20011208 GRA27 1505 Ruelle, M Weigand, J 0 2 16 Yes 20011208 GRA19 1531 Ruelle, M Weigand, J 0 2 16 Yes 20011209 GVA05 752 Weigand, J Ruelle, M 0 0 3 Yes 20011209 GRA55 1614 Ruelle, M Weigand, J 1 2 11.1 Yes 20011209 GRA56 1540 Ruelle, M Weigand, J 1 3 11.1 Yes 20011209 GRA75 1427 Ruelle, M Weigand, J 1 4 12.2 Yes 20011209 GVA15 1056 Weigand, J Ruelle, M 0 3 11 No 20011209 GVA01 820 Weigand, J Ruelle, M 0 0 3 Yes 20011209 GVA12 1139 Weigand, J Ruelle, M 0 4 11.7 No 20011210 DTA04 1032 Ruelle, M Keith, K 2 4 7 No 20011210 DTA09 1106 Ruelle, M Keith, K 2 5 7 No 20011217 GRA12 1251 Collis, S Ruelle, M 0 2 9.4 No 20011217 GRA05 928 Ruelle, M Collis, S 0 2 3.3 Yes 20011217 GRA01 1008 Collis, S Ruelle, M 0 2 3.3 Yes 20011217 GRA29 1400 Keith, K Davern, T 0 3 10 No 20011219 DTA17 1129 Ruelle, M Asselta, S 0 2 11 Yes 20011219 DTA19 1248 Ruelle, M Asselta, S 0 2 12 No 20011219 DTA12 1052 Ruelle, M Asselta, S 0 1 8 No 20011219 DTA08 1008 Ruelle, M Asselta, S 0 1 8 No 20011220 JBA62 1114 Ruelle, M Keith, K 1 4 8 Yes 20011220 DTA31 1350 Ruelle, M Keith, K 0 5 10 Yes 20021202 GVA01 1228 Keith, K Ruelle, M 1 3 14.3 Yes 20021202 GVA09 1318 Keith, K Ruelle, M 0 3 13.9 Yes 20021202 GVA15 1433 Keith, K Ruelle, M 0 2 14.1 No 20021202 GVA14 1401 Keith, K Ruelle, M 0 2 14.5 No 20021203 DTA63 706 Ruelle, M Keith, K 0 1 3.9 No 20021203 DTA17 745 Ruelle, M Keith, K 0 1 6.3 Yes 20021203 DTA12 815 Ruelle, M Keith, K 0 2 7.2 Yes 20021203 DTA45 913 Ruelle, M Keith, K 0 1 11.6 Yes 20021203 DTA39 951 Ruelle, M Keith, K 0 1 11.3 Yes 20021203 DTA51 1101 Ruelle, M Keith, K 0 1 16.8 No

20021203 DTA37 1235 Ruelle, M Keith, K 0 2 17.4 Yes 20021204 JBA47 711 Ruelle, M Axelson, K 0 1 3.4 Yes 20021204 JBA33 751 Ruelle, M Axelson, K 0 1 7.2 No 20021204 JBA32 822 Ruelle, M Axelson, K 0 1 11.8 No 20021204 JBA05 952 Ruelle, M Axelson, K 0 0 14.2 Yes 20021204 JBA57 1147 Ruelle, M Axelson, K 0 2 15.8 No 20021204 JBA29 747 Ellis, S Keith, K 0 0 10 Yes 20021204 JBA28 818 Ellis, S Keith, K 0 0 12.5 No 20021204 JBA16 850 Ellis, S Keith, K 0 0 13.5 Yes 20021204 JBA09 920 Ellis, S Keith, K 0 1 13.1 Yes 20021204 JBA62 1124 Ellis, S Keith, K 0 1 15 Yes 20021205 RAA84 729 Keith, K Burnett, B 1 1 8.5 No 20021205 RAA58 832 Keith, K Burnett, B 1 1 12.2 No 20021205 RAA54 921 Keith, K Burnett, B 1 1 14.5 Yes 20021205 RAA81 655 Burnett, D Ruelle, M 1 2 7.9 Yes 20021205 RAA80 732 Burnett, D Ruelle, M 1 2 9.6 Yes 20021205 RAA75 804 Burnett, D Ruelle, M 1 2 12.2 Yes 20021205 RAA67 833 Burnett, D Ruelle, M 2 2 12.6 Yes 20021205 RAA61 911 Burnett, D Ruelle, M 2 1 13.6 Yes 20021205 RAA76 955 Burnett, D Ruelle, M 1 0 15.9 No 20021206 GRA04 908 Keith, K Sutton, L 0 2 12 No 20021206 GRA93 944 Keith, K Sutton, L 0 2 14.5 No 20021206 GRA91 1009 Keith, K Sutton, L 0 3 16.8 No 20021206 GRA85 747 Ellis, S Ruelle, M 0 1 9.7 Yes 20021206 GRA84 827 Ellis, S Ruelle, M 0 0 GRA78 950 Ellis, S Ruelle, M 0 0 13.3 Yes 20021206 GRA102 1057 Ellis, S Ruelle, M 0 2 15.2 No 20021206 GRA101 1122 Ellis, S Ruelle, M 1 2 14.8 No 20021209 RAA60 745 Ruelle, M Gallion, T 3 1 5.9 Yes 20021209 RAA59 822 Ruelle, M Gallion, T 2 1 8.8 Yes 20021209 RAA64 916 Ruelle, M Gallion, T 3 1 8.6 Yes 20021209 RAA74 957 Ruelle, M Gallion, T 3 1 10.2 Yes 20021210 GRA26 817 Keith, K Gallion, T 0 0 9.8 Yes 20021210 GRA13 919 Keith, K Gallion, T 0 2 9.5 Yes 20021210 GRA05 1123 Keith, K Gallion, T 0 2 12.4 Yes 20021210 DTA73 709 Newton, J Ruelle, M 0 1 5.9 Yes 20021210 DTA66 749 Newton, J Ruelle, M 0 1 9.8 Yes 20021210 DTA19 827 Newton, J Ruelle, M 0 1 10.4 No 20021210 DTA16 853 Newton, J Ruelle, M 0 1 11.4 No 20021210 DTA54 932 Newton, J Ruelle, M 1 2 11.8 Yes 20021210 DTA48 1010 Newton, J Ruelle, M 0 1 14.1 No 20021210 DTA43 1135 Newton, J Ruelle, M 1 2 16.4 No 20021211 RAA47 732 Keith, K Seibold, J 0 1 7.9 Yes 20021211 RAA19 844 Keith, K Seibold, J 0 1 9.9 No 20021211 RAA09 942 Keith, K Seibold, J 0 1 11.2 Yes 20021211 RAA06 1032 Keith, K Seibold, J 0 1 12 Yes 20021211 RAA34 747 Ruelle, M Gallion, T 0 2 Yes 20021211 RAA33 825 Ruelle, M Gallion, T 0 1 7 No 20021211 RAA28 912 Ruelle, M Gallion, T 0 2 10.5 Yes 20021211 RAA27 1006 Ruelle, M Gallion, T 0 0 12.9 Yes 20021211 RAA29 1045 Ruelle, M Gallion, T 0 2 14.1 No 20021212 DTA31 750 LaVelle, L Ruelle, M 0 1 5.9 Yes 20021212 DTA71 855 LaVelle, L Ruelle, M 0 1 8.2 Yes 20021212 DTA79 936 LaVelle, L Ruelle, M 0 1 9.9 Yes 20021212 DTA75 806 Burnett, D Keith, K 0 2 6.2 Yes 20021212 DTA24 842 Burnett, D Keith, K 0 2 9.5 No 20021212 DTA69 916 Burnett, D Keith, K 0 1 10 No 20021212 DTA65 1000 Burnett, D Keith, K 1 2 12.1 Yes 20021213 JBA65 756 Keith, K Ruelle, M 2 1 7.1 Yes 20021213 JBA60 826 Keith, K Ruelle, M 2 1 10 Yes 20021213 JBA65 901 Keith, K Ruelle, M 2 3 12.5 Yes 20030505 DTA63 838 Gartland, R Savage, K 0 3 12.8 Yes 20030505 DTA17 944 Gartland, R Savage, K 0 3 14 Yes 20030505 DTA12 1032 Gartland, R Savage, K 0 3 14.8 Yes 20030505 DTA45 1133 Gartland, R Savage, K 1 2 15.7 Yes 20030505 JBA66 900 Ruelle, M Keith, K 0 1 15.6 Yes 20030505 JBA60 929 Ruelle, M Keith, K 0 1 16.7 Yes 20030505 JBA65 1004 Ruelle, M Keith, K 0 2 17.8 Yes 20030506 RAA60 810 Savage, K LaVelle, L 0 2 13 Yes 20030506 RAA59 910 Savage, K LaVelle, L 0 2 15.9 Yes 20030506 RAA64 1008 Savage, K LaVelle, L 0 3 18.9 Yes 20030506 RAA74 1042 Savage, K LaVelle, L 0 2 20.5 Yes 20030506 RAA34 825 Keith, K Ruelle, M 1 3 14.2 Yes 20030506 RAA33 856 Keith, K Ruelle, M 0 3 15.6 Yes 20030506 RAA28 934 Keith, K Ruelle, M 0 4 17.2 Yes 20030506 RAA27 959 Keith, K Ruelle, M 0 3 18.9 Yes 20030506 RAA29 1039 Keith, K Ruelle, M 0 3 20.3 Yes 20030506 RAA47 736 Gartland, R Seibold, J 0 2 12 Yes 20030506 RAA54 841 Gartland, R Seibold, J 0 2 15.3 Yes 20030506 RAA58 930 Gartland, R Seibold, J 0 2 17.5 Yes 20030506 RAA84 1048 Gartland, R Seibold, J 0 3 20.4 Yes 20030509 RAA81 718 Gartland, R Savage, K 0 3 11.4 Yes 20030509 RAA80 755 Gartland, R Savage, K 0 4 12 Yes 20030509 RAA75 834 Gartland, R Savage, K 0 4 12.6 Yes 20030509 RAA67 905 Gartland, R Savage, K 0 4 13.2 Yes 20030509 RAA61 936 Savage, K Gartland, R 0 5 13.9 Yes 20030509 RAA76 1027 Savage, K Gartland, R 0 4 14.5 Yes 20030509 RAA19 759 Ruelle, M McAllister, H 0 3 12.1 Yes 20030509 RAA09 925 Ruelle, M McAllister, H 0 4 13.8 Yes 20030509 RAA06 1002 Ruelle, M McAllister, H 0 3 14.2 Yes 20030512 DTA73 850 Savage, K Gartland, R 0 1 19.6 Yes 20030512 DTA66 926 Savage, K Gartland, R 0 1 20.5 Yes 20030512 DTA19 1000 Savage, K Gartland, R 0 1 21.4 Yes 20030512 DTA16 1026 Savage, K Gartland, R 0 1 22.3 Yes 20030512 DTA54 1055 Savage, K Gartland, R 0 1 23.2 Yes 20030512 DTA48 1127 Savage, K Gartland, R 0 1 23.8 Yes 20030512 DTA43 1155 Savage, K Gartland, R 0 1 24.5 Yes 20030513 GRA26 845 Gartland, R Burnett, D 3 2 20.4 Yes 20030513 GRA13 937 Gartland, R Burnett, D 3 3 22.2 Yes 20030513 GRA04 820 Savage, K Burnett, B 3 2 20 Yes 20030513 GRA93 921 Savage, K Burnett, B 3 2 22 Yes 20030513 GRA91 1001 Savage, K Burnett, B 3 2 22.9 Yes 20030513 JBA29 833 Keith, K Axelson, K 3 1 20 Yes 20030513 JBA28 900 Keith, K Axelson, K 3 1 20.6 Yes 20030513 JBA16

932 Keith, K Axelson, K 2 1 21.7 Yes 20030513 JBA09 1001 Keith, K Axelson, K 2 1 22.8 Yes 20030514 JBA47 625 Keith, K McAllister, H 3 2 18.9 Yes 20030514 JBA33 703 Keith, K McAllister, H 3 2 19.1 Yes 20030514 JBA32 728 Keith, K McAllister, H 3 1 19.8 Yes 20030514 JBA05 824 Keith, K McAllister, H 3 2 20.8 Yes 20030514 JBA57 925 Keith, K McAllister, H 3 3 21.9 Yes 20030514 JBA62 958 Keith, K McAllister, H 3 4 22.8 Yes 20030514 GVA01 736 Savage, K Gartland, R 3 3 19.7 Yes 20030514 GVA09 832 Savage, K Gartland, R 3 2 20.9 Yes 20030514 GVA14 915 Savage, K Gartland, R 3 3 21.6 Yes 20030514 GVA15 950 Savage, K Gartland, R 3 3 22.7 Yes 20030515 GRA85 829 Savage, K Gartland, R 0 1 22.8 Yes 20030515 GRA84 918 Savage, K Gartland, R 0 1 24.5 Yes 20030515 GRA102 1105 Savage, K Gartland, R 0 3 27.2 Yes 20030515 GRA101 1137 Savage, K Gartland, R 0 2 28.1 Yes 20030516 DTA75 724 Savage, K Gartland, R 0 1 19.5 Yes 20030516 DTA24 806 Savage, K Gartland, R 0 1 20.1 Yes 20030516 DTA69 838 Savage, K Gartland, R 0 1 20.8 Yes 20030516 DTA65 930 Savage, K Gartland, R 0 1 22.3 Yes 20030516 DTA71 1048 Gartland, R Savage, K 0 3 25 Yes 20030516 DTA79 1115 Gartland, R Savage, K 0 2 26.1 Yes

Birds Observed during Surveys of Dec.2001, Dec.2002, and May2003

Date	Transect	AOU	D Along	Total	D Away	Bird Notes
20011204	RAA58	VERD	0	1	10-25 m	
20011204	RAA59	HOLA	0	1	Flyover	
20011204	RAA59	HOLA	40	1	Flyover	
20011204	RAA61	HOLA	200	1	Flyover	
20011204	RAA64	HOLA	250	3	Flyover	
20011204	RAA09	CORA	250	1	>250 m	
20011207	JBA47	UNK	250	1	>250 m	large raptor several miles away
20011207	JBA09	VERD	0	1	(>25 m)	
20011207	JBA09	VERD	130	1	0-10 m	
20011208	GRA27	HOLA	170	5	0-10 m	
20011208	GRA19	HOLA	40	16	10-25 m	
20011208	GRA19	HOLA	40	6	0-10 m	
20011208	GRA19	HOLA	40	5	10-25 m	
20011208	GRA19	SAGS	110	2	0-10 m	
20011208	GRA27	HOLA	180	3	0-10 m	
20011208	GRA19	UNK	250	1	Flyover	probably HOLA
20011208	GRA27	HOLA	150	2	0-10 m	
20011209	GVA05	HOLA	60	1	Flyover	
20011209	GVA01	HOLA	25	1	Flyover	
20011209	GRA55	HOLA	50	1	Flyover	
20011209	GVA01	HOLA	2	3	Flyover	
20011209	GRA75	VERD	225	1	0-10 m	
20011209	GRA56	HOLA	155	4	0-10 m	
20011209	GVA01	SAGS	100	2	10-25 m	
20011209	GVA01	SAGS	100	1	0-10 m	
20011209	GVA01	ROWR	0	1	(>25 m)	
20011209	GRA56	HOLA	100	8	0-10 m	
20011209	GRA56	HOLA	140	17	0-10 m	
20011209	GRA56	HOLA	200	12	10-25 m	
20011209	GRA56	HOLA	225	15	10-25 m	
20011209	GRA56	LOSH	250	1	(>25 m)	on creosote
20011209	GRA75	BTSP	225	6	0-10 m	
20011217	GRA05	SP sp	100	1	10-25 m	sparrow, heard only
20011217	GRA05	HOLA	10	3	Flyover	

20011217GRA01	SP sp	100	1(>25 m)	unknown sparrow (heard only)
20011217GRA01	UNK	250	1(>25 m)	heard only, not HOLA
20011217GRA05	SP sp	50	1(>25 m)	sparrow, heard only
20011217GRA01	HOLA	0	1(>25 m)	
20011219DTA17	HOLA	150	2(>25 m)	heard only, at least 2
20011220JBA62	SAGS	10	20-10 m	
20011220JBA62	SAGS	150	4(>25 m)	
20011220JBA62	SAGS	200	310-25 m	
20011220DTA31	ROWR	50	110-25 m	not in rocks, no rocks around
20021202GVA01	HOLA	50	125-50 m	
20021202GVA09	CORA	0	1>250 m	
20021202GVA09	HOLA	50	125-50 m	
20021202GVA09	HOLA	100	150-250 m	
20021202GVA01	HOLA	150	250-250 m	
20021203DTA17	LCTH	200	150-250 m	
20021203DTA17	SAGS	150	125-50 m	
20021203DTA37	SAGS	0	125-50 m	
20021203DTA12	HOLA	50	225-50 m	
20021203DTA17	SAGS	150	150-250 m	
20021203DTA39	HOLA	250	150-250 m	
20021203DTA39	HOLA	225	2Flyover	
20021203DTA45	HOLA	100	150-250 m	
20021203DTA12	HOLA	100	5Flyover	
20021203DTA12	BTJR	100	110-25 m	
20021203DTA17	HOLA	200	150-250 m	
20021203DTA37	SAGS	225	110-25 m	
20021204JBA47	SAGS	150	250-250 m	
20021204JBA05	CORA	50	1>250 m	not on ground
20021204JBA05	SAGS	130	110-25 m	
20021204JBA09	SAGS	150	30-10 m	
20021204JBA16	CORA	200	1Flyover	
20021204JBA29	HOLA	150	410-25 m	
20021204JBA09	HOLA	50	125-50 m	
20021204JBA62	SAGS	100	125-50 m	
20021204JBA29	SAGS	50	125-50 m	
20021205RAA75	SAGS	225	10-10 m	
20021205RAA54	SAGS	25	125-50 m	
20021205RAA54	HOLA	25	125-50 m	
20021205RAA81	LCTH	200	2>250 m	
20021205RAA81	SAGS	10	125-50 m	
20021205RAA80	SAGS	20	125-50 m	
20021205RAA75	LCTH	0	1>250 m	
20021205RAA75	UNK	175	1>250 m	
20021205RAA67	SAGS	0	10-10 m	
20021205RAA67	SAGS	200	110-25 m	
20021205RAA61	LCTH	200	1>250 m	
20021205RAA81	SAGS	235	10-10 m	
20021206GRA78	HOLA	200	125-50 m	
20021206GRA78	HOLA	150	450-250 m	
20021206GRA85	UNK	50	150-250 m	

20021206GRA85	CORA	150	1>250 m	
20021206GRA84	LCTH	0	1>250 m	
20021209RAA59	LCTH	999	150-250 m	
20021209RAA60	CAWR	250	1>250 m	
20021209RAA60	SAGS	50	125-50 m	
20021209RAA59	VERD	999	210-25 m	
20021209RAA64	UNK	100	125-50 m	HOLA?
20021209RAA59	LCTH	999	110-25 m	
20021209RAA74	LCTH	0	150-250 m	
20021210DTA66	AMKE	230	110-25 m	
20021210DTA54	SAGS	200	110-25 m	
20021210DTA66	VERD	200	125-50 m	ID?
20021210DTA66	SAGS	50	110-25 m	
20021210DTA73	SAGS	150	125-50 m	
20021210DTA73	HOLA	100	150-250 m	
20021210GRA05	LCTH	50	150-250 m	
20021210GRA05	SAGS	160	125-50 m	
20021210GRA26	SAGS	125	110-25 m	
20021210GRA26	SAGS	125	20-10 m	
20021210GRA13	HOLA	5	225-50 m	
20021210GRA26	HOLA	250	18>250 m	
20021210DTA73	HOLA	50	150-250 m	
20021210DTA54	HOLA	100	1550-250 m	
20021211RAA09	SAGS	150	110-25 m	
20021211RAA27	HOLA	50	450-250 m	
20021211RAA28	SAGS	999	125-50 m	
20021211RAA28	ROWR	999	125-50 m	
20021211RAA28	HOLA	999	40-10 m	
20021211RAA33	SAGS	75	125-50 m	
20021211RAA33	VERD	0	125-50 m	
20021211RAA34	VERD	100	110-25 m	
20021211RAA06	CORA	200	1Flyover	
20021211RAA09	SAGS	150	10-10 m	
20021211RAA47	SAGS	250	110-25 m	
20021211RAA47	HOLA	250	4Flyover	
20021211RAA27	VERD	200	110-25 m	
20021211RAA34	SAGS	50	110-25 m	
20021212DTA79	BUOW	50	10-10 m	ID?
20021212DTA31	LCTH	100	1>250 m	
20021212DTA31	SAGS	150	310-25 m	
20021212DTA65	SAGS	250	225-50 m	
20021212DTA71	SAGS	50	410-25 m	
20021212DTA75	SAGS	100	2Flyover	
20021212DTA79	SAGS	150	125-50 m	
20021212DTA71	SAGS	200	20-10 m	
20021212DTA71	HOLA	150	20-10 m	
20021212DTA65	LCTH	200	150-250 m	
20021213JBA66	SAGS	200	125-50 m	
20021213JBA60	HOLA	50	20-10 m	
20021213JBA60	SAGS	150	125-50 m	

20021213JBA60	SAGS	0	225-50 m	
20021213JBA60	CORA	0	2Flyover	
20021213JBA65	CORA	250	2Flyover	
20021213JBA66	SAGS	100	110-25 m	
20021213JBA66	SAGS	0	110-25 m	
20021213JBA66	SAGS	0	125-50 m	
20021213JBA66	SAGS	250	125-50 m	
20021213JBA66	CORA	250	1>250 m	
20030505JBA60	SAGS	50	10-10 m	
20030505JBA65	HOLA	0	5Flyover	
20030505JBA65	HOLA	0	210-25 m	
20030505JBA65	HOLA	50	110-25 m	
20030505JBA65	HOLA	50	125-50 m	
20030505JBA65	SAGS	150	125-50 m	
20030505JBA60	HOLA	250	2Flyover	
20030505JBA65	HOLA	150	210-25 m	
20030505JBA65	BTJR	200	1?	
20030505JBA65	HOLA	200	250-250 m	
20030505JBA65	SAGS	100	125-50 m	
20030505DTA17	SAGS	250	150-250 m	
20030505JBA66	UNK	150	125-50 m	
20030505JBA66	HOLA	150	110-25 m	
20030505JBA66	SAGS	150	10-10 m	
20030505JBA66	HOLA	100	10-10 m	
20030505JBA66	HOLA	50	125-50 m	
20030505JBA66	HOLA	50	110-25 m	
20030505JBA66	SAGS	50	125-50 m	
20030505JBA66	SAGS	50	310-25 m	
20030505DTA45	SAGS	50	125-50 m	
20030505JBA66	SAGS	200	310-25 m	
20030505JBA65	SAGS	200	150-250 m	
20030505DTA45	CORA	250	1>250 m	
20030505DTA17	CORA	150	1>250 m	
20030505DTA17	SAGS	200	110-25 m	
20030505DTA17	SAGS	150	150-250 m	
20030505DTA17	WEKI	100	125-50 m	
20030505DTA63	HOLA	150	110-25 m	
20030505DTA63	SAGS	200	125-50 m	
20030505DTA63	SAGS	100	150-250 m	
20030505DTA63	SP sp	75	110-25 m	Unknown sparrow
20030505JBA60	HOLA	250	350-250 m	
20030505DTA12	SAGS	200	150-250 m	
20030505JBA66	HOLA	200	1Flyover	
20030505DTA12	SP sp	100	150-250 m	Unknown sparrow
20030505JBA66	SAGS	200	225-50 m	
20030505JBA60	HOLA	150	250-250 m	
20030505JBA60	SAGS	100	10-10 m	
20030505JBA60	SAGS	100	250-250 m	
20030505JBA60	SAGS	50	110-25 m	
20030505JBA60	HOLA	50	225-50 m	

20030505JBA66	CORA	100	1Flyover	
20030505JBA60	SAGS	200	10-10 m	
20030505JBA60	SAGS	200	325-50 m	
20030506RAA84	MODO	250	2Flyover	
20030506RAA33	HOLA	100	250-250 m	
20030506RAA33	LENI	25	110-25 m	
20030506RAA33	SAGS	0	150-250 m	
20030506RAA84	SAGS	200	225-50 m	
20030506RAA84	BTSP	250	125-50 m	
20030506RAA34	CORA	200	1Flyover	
20030506RAA84	HOLA	250	3Flyover	
20030506RAA34	SAGS	100	125-50 m	
20030506RAA33	HOLA	0	150-250 m	
20030506RAA84	BTSP	200	1?	
20030506RAA33	HOLA	200	2Flyover	
20030506RAA34	BTSP	0	110-25 m	
20030506RAA34	SAGS	0	125-50 m	
20030506RAA34	HOLA	100	1Flyover	
20030506RAA84	SAGS	250	225-50 m	
20030506RAA27	SP sp	200	150-250 m	Unknown sparrow: buzzy like SAGS, but higher
20030506RAA28	HOLA	25	7Flyover	
20030506RAA28	SAGS	150	150-250 m	
20030506RAA28	BTSP	50	125-50 m	
20030506RAA28	HOLA	50	4Flyover	
20030506RAA28	HOLA	200	10-10 m	
20030506RAA27	SAGS	150	150-250 m	
20030506RAA28	SAGS	0	125-50 m	
20030506RAA27	HOLA	50	150-250 m	
20030506RAA33	SAGS	200	125-50 m	
20030506RAA84	SAGS	50	110-25 m	
20030506RAA29	SAGS	50	150-250 m	
20030506RAA29	SAGS	150	150-250 m	
20030506RAA29	HOLA	150	150-250 m	
20030506RAA28	HOLA	0	2Flyover	
20030506RAA28	HOLA	0	10-10 m	
20030506RAA28	HOLA	0	7Flyover	
20030506RAA27	LENI	150	10-10 m	
20030506RAA60	HOLA	250	1Flyover	
20030506RAA59	LCTH	250	1>250 m	
20030506RAA59	SAGS	250	150-250 m	
20030506RAA59	HOLA	200	125-50 m	
20030506RAA59	CAWR	150	1>250 m	
20030506RAA59	HOLA	150	1Flyover	
20030506RAA59	HOLA	100	1Flyover	
20030506RAA64	HOLA	100	1>250 m	
20030506RAA60	LOSH	0	225-50 m	
20030506RAA59	SAGS	100	125-50 m	
20030506RAA60	HOLA	200	1Flyover	
20030506RAA60	SAGS	200	125-50 m	
20030506RAA60	SAGS	100	125-50 m	

20030506RAA60	VERD	100	150-250 m	
20030506RAA84	HOLA	75	210-25 m	
20030506RAA84	HOLA	160	3Flyover	
20030506RAA60	SAGS	50	125-50 m	
20030506RAA58	BTSP	100	10-10 m	Carrying nesting material
20030506RAA60	SAGS	250	125-50 m	
20030506RAA58	COHU?	200	1?	
20030506RAA64	HOLA	200	250-250 m	
20030506RAA58	BTSP	50	150-250 m	
20030506RAA58	SAGS	0	150-250 m	
20030506RAA54	SAGS	230	150-250 m	
20030506RAA54	SAGS	40	125-50 m	
20030506RAA54	HOLA	70	825-50 m	
20030506RAA74	HOLA	50	125-50 m	
20030506RAA74	SAGS	50	150-250 m	
20030506RAA74	SAGS	150	425-50 m	
20030506RAA74	HOLA	250	2Flyover	
20030506RAA74	FL sp	100	150-250 m	possible ATFL
20030506RAA74	SAGS	200	1010-25 m	
20030506RAA74	SAGS	200	1025-50 m	
20030506RAA47	SAGS	150	10-10 m	
20030509RAA76	SAGS	250	150-250 m	
20030509RAA61	CORA	150	1Flyover	
20030509RAA67	HOLA	100	2Flyover	
20030509RAA67	HOLA	200	125-50 m	
20030509RAA67	HOLA	250	5Flyover	
20030509RAA67	HOLA	100	125-50 m	
20030509RAA61	HOLA	100	125-50 m	
20030509RAA67	HOLA	50	110-25 m	
20030509RAA61	CORA	50	1Flyover	
20030509RAA76	HOLA	150	125-50 m	
20030509RAA19	SAGS	50	150-250 m	
20030509RAA76	SAGS	250	210-25 m	
20030509RAA67	HOLA	50	1Flyover	
20030509RAA76	SAGS	220	125-50 m	
20030509RAA19	BTSP	50	150-250 m	
20030509RAA76	HOLA	200	250-250 m	
20030509RAA80	SAGS	50	125-50 m	
20030509RAA19	UNK	250	1Flyover	
20030509RAA81	HOLA	100	1Flyover	
20030509RAA81	SAGS	200	325-50 m	
20030509RAA81	SAGS	50	1Flyover	
20030509RAA81	HOLA	250	350-250 m	
20030509RAA80	HOLA	50	20-10 m	
20030509RAA81	SAGS	50	125-50 m	
20030509RAA80	HOLA	0	4Flyover	
20030509RAA67	HOLA	0	210-25 m	
20030509RAA80	SAGS	150	410-25 m	
20030509RAA80	SP sp	200	150-250 m	Unknown sparrow
20030509RAA80	VERD	150	10-10 m	

20030509RAA75	CORA	100	3Flyover
20030509RAA75	HOLA	200	125-50 m
20030509RAA75	HOLA	150	1Flyover
20030509RAA80	SAGS	0	125-50 m
20030509RAA19	UNK	200	150-250 m
20030509RAA19	HOLA	200	2Flyover
20030509RAA09	HOLA	100	2Flyover
20030509RAA09	SAGS	100	125-50 m
20030509RAA09	SAGS	150	110-25 m
20030509RAA06	HOLA	0	225-50 m
20030509RAA06	SAGS	200	20-10 m
20030509RAA06	HOLA	150	110-25 m
20030512DTA54	SAGS	0	30-10 m
20030512DTA16	HOLA	250	2Flyover
20030512DTA16	HOLA	230	125-50 m
20030512DTA16	HOLA	225	1Flyover
20030512DTA16	HOLA	25	110-25 m
20030512DTA16	HOLA	0	125-50 m
20030512DTA19	SAGS	150	150-250 m
20030512DTA54	SAGS	25	110-25 m
20030512DTA19	CORA	50	2Flyover
20030512DTA48	HOLA	150	150-250 m
20030512DTA19	CORA	100	20-10 m
20030512DTA54	SAGS	50	110-25 m
20030512DTA54	SAGS	50	150-250 m
20030512DTA54	SAGS	100	1>250 m
20030512DTA19	CORA	50	110-25 m
20030512DTA48	CORA	50	1>250 m
20030512DTA54	HOLA	0	2Flyover
20030512DTA48	CORA	200	1>250 m
20030512DTA48	SAGS	200	125-50 m
20030512DTA48	UNK	125	125-50 m
20030512DTA43	SAGS	100	250-250 m
20030512DTA43	HOLA	130	1Flyover
20030512DTA54	HOLA	250	1>250 m
20030512DTA73	HOLA	150	325-50 m
20030512DTA54	CORA	0	150-250 m
20030512DTA19	SAGS	0	125-50 m
20030512DTA73	HOLA	20	525-50 m
20030512DTA73	SAGS	50	20-10 m
20030512DTA73	SAGS	50	410-25 m
20030512DTA73	SAGS	100	20-10 m
20030512DTA73	HOLA	150	2Flyover
20030512DTA73	HOLA	200	1Flyover
20030512DTA73	SAGS	200	210-25 m
20030512DTA73	CORA	200	10Flyover
20030512DTA73	SAGS	125	20-10 m
20030512DTA66	CORA	0	1Flyover
20030512DTA66	SAGS	200	125-50 m
20030512DTA66	HOLA	100	125-50 m

20030512DTA73	SAGS	100	210-25 m	
20030512DTA66	HOLA	225	210-25 m	
20030512DTA66	HOLA	50	2Flyover	
20030512DTA66	HOLA	200	6Flyover	
20030512DTA66	HOLA	150	1Flyover	
20030512DTA66	CORA	125	1Flyover	
20030512DTA66	SAGS	100	150-250 m	
20030512DTA66	SAGS	100	125-50 m	
20030512DTA66	SAGS	50	150-250 m	
20030513JBA29	HOLA	200	1Flyover	
20030513JBA28	CORA	150	2Flyover	
20030513JBA28	HOLA	150	125-50 m	
20030513JBA28	HOLA	135	1Flyover	
20030513JBA28	UNK	100	150-250 m	heard only
20030513JBA28	SAGS	50	150-250 m	
20030513JBA28	HOLA	50	125-50 m	
20030513JBA29	HOLA	170	1Flyover	
20030513JBA29	HOLA	230	10-10 m	
20030513JBA28	HOLA	150	310-25 m	
20030513JBA29	HOLA	150	18Flyover	
20030513JBA29	HOLA	80	3Flyover	
20030513JBA09	HOLA	250	1Flyover	
20030513JBA29	HOLA	240	10-10 m	
20030513JBA28	HOLA	200	125-50 m	
20030513JBA28	CORA	0	4>250 m	In nest in YUBR (looked at nest after finishing transect).
20030513JBA16	HOLA	0	110-25 m	
20030513JBA16	HOLA	50	225-50 m	
20030513JBA16	HOLA	100	10-10 m	
20030513JBA16	HOLA	200	1Flyover	
20030513JBA16	HOLA	220	10-10 m	
20030513JBA09	SAGS	0	110-25 m	
20030513JBA09	HOLA	30	2Flyover	
20030513JBA09	SAGS	50	125-50 m	
20030513JBA09	CORA	200	2Flyover	
20030513JBA29	HOLA	60	1Flyover	
20030513GRA91	SAGS	100	150-250 m	
20030513JBA09	HOLA	150	2Flyover	
20030513GRA13	HOLA	0	1Flyover	
20030513GRA26	HOLA	150	1Flyover	
20030513GRA91	VESP	50	110-25 m	
20030513JBA29	CORA	50	1Flyover	
20030513GRA26	SAGS	225	250-250 m	
20030513GRA13	SAGS	50	325-50 m	
20030513GRA13	FL sp.	250	1Flyover	Unknown flycatcher
20030513GRA04	HOLA	0	125-50 m	
20030513GRA04	HOLA	50	110-25 m	
20030513GRA04	HOLA	100	4Flyover	
20030513GRA04	SAGS	125	410-25 m	
20030513GRA04	SAGS	200	10-10 m	
20030513GRA04	HOLA	150	6Flyover	

20030513GRA04	VESP	100	10-10 m
20030513GRA93	BTSP	0	125-50 m
20030513GRA91	SAGS	0	50-10 m
20030513JBA29	HOLA	0	6Flyover
20030513GRA13	CAWR	25	10-10 m
20030513JBA29	HOLA	40	1Flyover
20030513GRA93	BTSP	50	150-250 m
20030513GRA91	VESP	50	310-25 m
20030513GRA91	HOLA	200	1Flyover
20030513GRA91	TOWA	0	10-10 m
20030513GRA93	SAGS	250	10-10 m
20030513GRA93	SAGS	250	150-250 m
20030513GRA93	BTSP	200	210-25 m
20030513GRA93	VERD	200	210-25 m
20030513GRA93	LCTH	150	125-50 m
20030514GVA01	HOLA	0	225-50 m
20030514GVA01	HOLA	0	10-10 m
20030514GVA15	UNK	200	125-50 m
20030514GVA01	SAGS	0	125-50 m
20030514GVA01	SAGS	50	210-25 m
20030514GVA01	HOLA	50	225-50 m
20030514GVA01	SAGS	100	150-250 m
20030514JBA62	SAGS	150	125-50 m
20030514GVA01	HOLA	150	10-10 m
20030514GVA01	HOLA	150	1Flyover
20030514GVA01	HOLA	60	3Flyover
20030514JBA62	HOLA	250	6Flyover
20030514JBA62	SAGS	50	225-50 m
20030514JBA62	SAGS	220	325-50 m
20030514JBA62	SAGS	170	310-25 m
20030514JBA62	HOLA	100	1Flyover
20030514JBA62	HOLA	100	110-25 m
20030514JBA62	HOLA	100	2Flyover
20030514JBA62	SAGS	100	125-50 m
20030514GVA01	BTSP	250	3?
20030514JBA62	HOLA	50	125-50 m
20030514GVA14	HOLA	200	110-25 m
20030514JBA62	SAGS	200	425-50 m
20030514GVA14	HOLA	50	150-250 m
20030514JBA62	SAGS	0	150-250 m
20030514JBA05	SAGS	200	150-250 m
20030514GVA15	HOLA	200	225-50 m
20030514GVA15	LCTH	150	150-250 m
20030514GVA15	HOLA	150	125-50 m
20030514GVA15	HOLA	100	150-250 m
20030514GVA15	HOLA	50	225-50 m
20030514GVA15	HOLA	50	250-250 m
20030514GVA14	HOLA	240	3Flyover
20030514GVA14	HOLA	100	125-50 m
20030514GVA14	HOLA	150	125-50 m

20030514GVA01	MODO	200	1>250 m	beyond transect
20030514GVA14	HOLA	0	250-250 m	
20030514GVA09	LENI	125	10-10 m	Looked darker than LENI, but white colar was v. prominent
20030514GVA09	HOLA	250	650-250 m	
20030514GVA09	HOLA	250	125-50 m	
20030514GVA09	LCTH	200	150-250 m	
20030514GVA09	HOLA	100	110-25 m	
20030514GVA09	MODO	100	1>250 m	
20030514GVA09	HOLA	60	150-250 m	
20030514GVA09	HOLA	60	125-50 m	
20030514GVA09	HOLA	0	150-250 m	
20030514GVA14	HOLA	200	1Flyover	
20030514JBA47	HOLA	100	110-25 m	
20030514JBA33	SAGS	220	110-25 m	
20030514JBA33	HOLA	200	4Flyover	
20030514JBA33	HOLA	200	5Flyover	
20030514JBA33	HOLA	100	1Flyover	
20030514JBA33	SAGS	100	125-50 m	
20030514JBA33	HOLA	50	20-10 m	
20030514JBA33	HOLA	0	2Flyover	
20030514JBA33	SAGS	0	110-25 m	
20030514JBA33	HOLA	0	225-50 m	
20030514JBA33	HOLA	250	15Flyover	Flock may have included previously counted HOLA's.
20030514JBA47	HOLA	150	2Flyover	
20030514JBA33	HOLA	100	210-25 m	
20030514JBA47	SAGS	100	125-50 m	
20030514JBA47	HOLA	60	10-10 m	
20030514JBA47	HOLA	50	125-50 m	
20030514JBA47	HOLA	50	125-50 m	
20030514JBA47	HOLA	50	110-25 m	
20030514JBA47	SAGS	20	125-50 m	
20030514JBA47	HOLA	20	210-25 m	
20030514JBA57	SAGS	0	10-10 m	
20030514JBA57	SAGS	250	225-50 m	
20030514JBA47	HOLA	200	2Flyover	
20030514JBA57	SAGS	50	225-50 m	
20030514JBA57	SAGS	200	110-25 m	
20030514JBA57	SAGS	100	110-25 m	
20030514JBA57	HOLA	100	40Flyover	These probably included others that had flown earlier.
20030514JBA33	SAGS	20	210-25 m	
20030514JBA57	HOLA	50	2Flyover	
20030514JBA32	HOLA	0	125-50 m	
20030514JBA57	HOLA	50	10-10 m	
20030514JBA57	HOLA	30	3Flyover	
20030514JBA57	SAGS	20	310-25 m	
20030514JBA57	HOLA	5	1Flyover	
20030514JBA57	SAGS	0	125-50 m	
20030514JBA32	SAGS	250	1>250 m	
20030514JBA57	SAGS	70	110-25 m	
20030514JBA32	CORA	150	1Flyover	

20030514JBA05	HOLA	250	150-250 m
20030514JBA32	HOLA	50	1Flyover
20030514JBA32	SAGS	250	150-250 m
20030514JBA05	HOLA	0	4Flyover
20030514JBA05	SAGS	50	150-250 m
20030514JBA05	SAGS	100	250-250 m
20030514JBA05	CORA	100	1Flyover
20030514JBA32	HOLA	200	1Flyover
20030515GRA84	SAGS	100	110-25 m
20030515GRA101	SAGS	200	30-10 m
20030515GRA102	SAGS	200	150-250 m
20030515GRA84	HOLA	250	110-25 m
20030515GRA102	ROWR	100	1>250 m
20030515GRA102	HOLA	200	225-50 m
20030515GRA102	HOLA	150	125-50 m
20030515GRA101	MODO	50	1>250 m
20030515GRA101	HOLA	75	2Flyover
20030515GRA101	HOLA	100	2Flyover
20030515GRA101	HOLA	250	4Flyover
20030515GRA101	UNK	200	150-250 m
20030515GRA102	BTSP	25	350-250 m
20030515GRA84	BTSP	200	225-50 m
20030515GRA101	HOLA	100	110-25 m
20030515GRA85	HOLA	50	250-250 m
20030515GRA84	SAGS	200	150-250 m
20030515GRA102	BTSP	200	250-250 m
20030515GRA85	SAGS	50	250-250 m
20030515GRA85	SAGS	100	110-25 m
20030515GRA85	SAGS	100	1Flyover
20030515GRA85	HOLA	150	125-50 m
20030515GRA85	HOLA	200	125-50 m
20030515GRA85	SAGS	200	110-25 m
20030515GRA84	HOLA	50	150-250 m
20030515GRA84	SAGS	50	125-50 m
20030515GRA84	SAGS	50	150-250 m
20030515GRA84	HOLA	75	125-50 m
20030515GRA85	HOLA	250	1Flyover
20030515GRA84	HOLA	150	150-250 m
20030515GRA84	BTSP	100	125-50 m
20030516DTA69	SAGS	200	150-250 m
20030516DTA65	SAGS	150	150-250 m
20030516DTA65	UNK	100	150-250 m
20030516DTA65	SAGS	50	150-250 m
20030516DTA65	SAGS	0	10-10 m
20030516DTA69	HOLA	200	3Flyover
20030516DTA69	SAGS	100	150-250 m
20030516DTA69	SAGS	250	125-50 m
20030516DTA69	SAGS	200	150-250 m
20030516DTA65	SAGS	150	20-10 m
20030516DTA71	SAGS	0	210-25 m

20030516DTA69	HOLA	250	125-50 m	
20030516DTA65	SAGS	200	20-10 m	
20030516DTA65	WETA	250	110-25 m	
20030516DTA71	SAGS	0	110-25 m	
20030516DTA71	HOLA	0	125-50 m	
20030516DTA71	SAGS	75	325-50 m	
20030516DTA71	SAGS	100	125-50 m	
20030516DTA69	HOLA	100	2Flyover	
20030516DTA71	HOLA	200	110-25 m	
20030516DTA24	HOLA	100	3Flyover	
20030516DTA71	SAGS	0	425-50 m	
20030516DTA71	HOLA	50	1Flyover	
20030516DTA71	SAGS	100	150-250 m	
20030516DTA71	ATFL	125	1Flyover	
20030516DTA71	LCTH	150	125-50 m	
20030516DTA71	SAGS	200	20-10 m	
20030516DTA24	HOLA	45	3Flyover	
20030516DTA71	SAGS	200	125-50 m	
20030516DTA75	FL sp	50	150-250 m	Empidonax.
20030516DTA75	HOLA	50	125-50 m	
20030516DTA75	SAGS	50	310-25 m	
20030516DTA75	HOLA	75	10-10 m	
20030516DTA75	HOLA	100	125-50 m	
20030516DTA75	CORA	150	1Flyover	
20030516DTA75	BTSP	200	150-250 m	
20030516DTA75	HOLA	200	125-50 m	
20030516DTA75	SAGS	250	225-50 m	
20030516DTA75	MODO	50	110-25 m	
20030516DTA24	HOLA	150	14Flyover	
20030516DTA24	SAGS	0	250-250 m	
20030516DTA69	SAGS	50	150-250 m	
20030516DTA24	HOLA	50	150-250 m	
20030516DTA24	SAGS	50	325-50 m	
20030516DTA24	SAGS	50	150-250 m	
20030516DTA24	ROWR	60	350-250 m	
20030516DTA24	BTSP	100	210-25 m	
20030516DTA24	HOLA	150	210-25 m	
20030516DTA24	BTSP	200	10-10 m	
20030516DTA24	HU sp	200	110-25 m	Hummingbird sp.
20030516DTA24	SAGS	200	410-25 m	
20030516DTA24	HOLA	250	110-25 m	
20030516DTA69	SAGS	0	225-50 m	
20030516DTA75	SP sp	0	150-250 m	

Transects for Monitoring Winter Bird Populations along OHV trails

Area	Transect	Start E	Start N	Fin E	Fin N
Desert Tortoise (All)	DT023	415067	3894856	415070	3895106
Desert Tortoise (All)	DT037	418375	3897094	418125	3897097
Desert Tortoise (All)	DT043	416875	3897111	416625	3897112

Desert Tortoise (All)	DT045	416375	3897111	416125	3897111
Desert Tortoise (All)	DT047	415875	3897110	415625	3897109
Desert Tortoise (All)	DT049	415375	3897109	415125	3897108
Desert Tortoise (All)	DT051	416691	3894943	416691	3895193
Desert Tortoise (All)	DT061	416704	3897441	416709	3897691
Desert Tortoise (All)	DT065	416724	3898441	416729	3898691
Desert Tortoise (All)	DT073	415850	3896307	415600	3896308
Desert Tortoise (All)	DT077	414100	3895920	414106	3896170
Desert Tortoise (All)	DT081	414880	3896882	414631	3896891
Desert Tortoise (All)	DT097	419483	3898745	419233	3898735
Desert Tortoise (All)	DT111	415984	3898701	415734	3898704
Desert Tortoise (All)	DT117	414496	3898753	414253	3898790
Desert Tortoise (All)	DT121	417461	3897887	417211	3897886
Desert Tortoise (All)	DT125	418287	3894889	418289	3895139
Desert Tortoise (All)	DT129	418293	3895889	418293	3896139
Desert Tortoise (All)	DT131	418292	3896389	418292	3896639
Desert Tortoise (All)	DT135	418297	3897389	418301	3897639
Desert Tortoise (All)	DT137	419918	3895970	419920	3896220
Desert Tortoise (All)	DT139	419922	3896470	419924	3896720
Desert Tortoise (All)	DT141	419926	3896970	419930	3897220
Desert Tortoise (All)	DT147	419982	3898469	419993	3898718
Desert Tortoise (All)	DT149	419997	3898968	420002	3899218
Desert Tortoise (All)	DT155	420025	3900468	420029	3900718
Grass Valley (All)	GR015	467016	3903856	466768	3903890
Grass Valley (All)	GR027	469863	3902168	469730	3902380
Grass Valley (All)	GR031	469270	3902972	469103	3903158
Grass Valley (All)	GR033	468984	3903377	468854	3903589
Golden Valley (All)	GV002	451810	3916490	451571	3916422
Golden Valley (All)	GV012	453615	3914418	453404	3914547
Golden Valley (All)	GV020	451972	3915375	451837	3915582
Golden Valley (All)	GV024	451698	3916028	451472	3915937
Golden Valley (All)	GV034	453996	3913018	453996	3913268
Golden Valley (All)	GV036	453996	3913518	453996	3913768
Jawbone ACEC North	JB001	414180	3935231	413963	3935353
Jawbone ACEC North	JB003	414609	3934975	414396	3935106
Jawbone ACEC North	JB007	413695	3934737	413767	3934976
Jawbone ACEC North	JB019	412038	3931997	412156	3932214
Jawbone ACEC North	JB021	411798	3931559	411913	3931781
Jawbone ACEC North	JB023	411565	3931117	411682	3931338
Jawbone ACEC North	JB025	411340	3930670	411455	3930892
Jawbone ACEC North	JB027	411107	3930228	411222	3930450
Jawbone ACEC North	JB029	410878	3929783	410992	3930006
Jawbone ACEC North	JB033	409359	3926850	409473	3927073
Jawbone ACEC North	JB037	412303	3927850	412115	3928009
Jawbone ACEC North	JB043	411084	3928710	410867	3928835
Fremont Valley	RA006	436709	3916857	436514	3917013
Fremont Valley	RA008	436317	3917168	436125	3917326
Fremont Valley	RA012	435537	3917792	435341	3917947
Fremont Valley	RA014	435144	3918101	434945	3918252
Fremont Valley	RA018	434366	3918728	434169	3918882

Western Rands ACEC	RA022	430144	3910030	429894	3910038
Fremont Valley	RA030	431806	3910767	431610	3910615
Fremont Valley	RA032	432175	3911097	431980	3910944
Fremont Valley	RA034	432480	3911486	432337	3911283
Fremont Valley	RA036	432888	3911715	432718	3911558
Fremont Valley	RA038	433352	3911891	433121	3911799
Fremont Valley	RA040	433741	3912179	433571	3912006
Fremont Valley	RA042	433914	3912610	433897	3912369
Fremont Valley	RA044	434171	3913016	434070	3912796
Fremont Valley	RA046	434350	3913437	434260	3913240
Fremont Valley	RA048	434720	3913756	434521	3913618
Fremont Valley	RA050	435031	3914110	434919	3913897
Fremont Valley	RA058	431009	3910586	430898	3910810
Fremont Valley	RA064	430400	3911955	430298	3912183
Fremont Valley	RA068	433354	3911248	433245	3911031
Fremont Valley	RA074	435142	3913208	435356	3913077
Fremont Valley	RA076	434714	3913469	434928	3913344
Western Rands ACEC	RA080	429652	3910086	429474	3909962

Specific visits to the above transects during February of 2003:

Transect Date Time Recorder Observer Sky Wind Temp Birds DT137 20030202 6:59:00 AM Keith, K Ruelle, M 0 2 Yes DT141 20030202 7:35:00 AM Keith, K Ruelle, M 0 3 Yes DT139 20030202 7:17:00 AM Keith, K Ruelle, M 0 3 Yes DT147 20030202 8:00:00 AM Keith, K Ruelle, M 0 4 No DT149 20030202 8:21:00 AM Keith, K Ruelle, M 0 4 Yes DT155 20030202 8:49:00 AM Keith, K Ruelle, M 0 4 Yes DT097 20030202 9:43:00 AM Keith, K Ruelle, M 1 3 Yes DT135 20030202 10:23:00 AM Keith, K Ruelle, M 1 4 No DT037 20030202 10:45:00 AM Keith, K Ruelle, M 1 4 No DT131 20030202 11:33:00 AM Keith, K Ruelle, M 1 4 No DT129 20030202 11:49:00 AM Keith, K Ruelle, M 1 4 No DT125 20030202 12:09:00 PM Keith, K Ruelle, M 1 4 Yes GV020 20030203 7:35:00 AM Ruelle, M Keith, K 0 2 6.7 Yes GV024 20030203 8:04:00 AM Ruelle, M Keith, K 0 3 8 Yes GV002 20030203 8:27:00 AM Ruelle, M Keith, K 0 2 9.2 Yes GV034 20030203 9:27:00 AM Ruelle, M Keith, K 0 1 12.5 Yes GV036 20030203 9:50:00 AM Ruelle, M Keith, K 0 1 13.4 Yes GV012 20030203 10:19:00 AM Ruelle, M Keith, K 0 2 11.9 Yes JB033 20030204 7:07:00 AM Gartland, R Keith, K 0 1 1 Yes JB029 20030204 7:53:00 AM Gartland, R Keith, K 0 1 4.2 Yes JB027 20030204 8:14:00 AM Gartland, R Keith, K 0 1 8.9 Yes JB025 20030204 8:52:00 AM Gartland, R Keith, K 0 1 10.1 Yes JB023 20030204 9:16:00 AM Keith, K Gartland, R 0 1 11 Yes JB021 20030204 9:40:00 AM Keith, K Gartland, R 0 1 11 Yes JB019 20030204 10:04:00 AM Keith, K Gartland, R 0 1 12.1 Yes RA050 20030204 7:08:00 AM Ruelle, M Ellis, S 0 2 2.4 Yes RA048 20030204 7:28:00 AM Ruelle, M Ellis, S 0 1 2.3 Yes RA046 20030204 7:58:00 AM Ruelle, M Ellis, S 0 2 3.8 Yes RA044 20030204 8:20:00 AM Ruelle, M Ellis, S 0 1 4.9 Yes RA042 20030204 8:49:00 AM Ruelle, M Ellis, S 0 1 6.9 Yes RA076 20030204 9:58:00 AM Ruelle, M Ellis, S 0 1 9.5 Yes RA074 20030204 10:18:00 AM Ruelle, M Ellis, S 0 1 8.7 Yes RA006 20030205 7:17:00 AM Keith, K Burnett, D 0 3 3.2 Yes RA008 20030205 7:42:00 AM Keith, K Burnett, D 0 3 4.2 Yes RA012 20030205 8:18:00 AM Keith, K Burnett, D 0 4 7 Yes RA014 20030205 8:39:00 AM Keith, K Burnett, D 0 4 6.9 Yes RA018 20030205 9:21:00 AM Keith, K Burnett, D 0 4 8.3 Yes RA064 20030205 7:17:00 AM Burnett, B Ruelle, M 0 4 4.2 No RA058 20030205 7:42:00 AM Burnett, B Ruelle, M 0 4 5.2 Yes RA022 20030205 8:34:00 AM Burnett, B Ruelle, M 0 4 6.5 Yes RA080 20030205 8:55:00 AM Burnett, B Ruelle, M 0 4 7.4 Yes GR027 20030206 8:28:00 AM Keith, K Gartland, R 0 4 7 Yes GR031 20030206 8:57:00 AM Keith, K Gartland, R 0 4 7.1 Yes GR033 20030206 9:24:00 AM Keith, K Gartland, R 0 3 8.2 Yes GR015 20030206 10:21:00 AM Keith, K Gartland, R 0 3 9.5 Yes JB003 20030206 7:14:00 AM Ruelle, M Axelson, K 0 0 Yes JB001 20030206 7:37:00 AM Ruelle, M Axelson, K 0 0 4.2 Yes JB007 20030206 8:10:00 AM Ruelle, M Axelson, K 0 1 5.2 Yes JB037 20030206 9:21:00 AM Ruelle, M Axelson, K 0 1 Yes JB043 20030206 9:57:00 AM Ruelle, M Axelson, K 0 2 Yes DT023 20030207 7:35:00 AM LaVelle, L Keith, K 0 1 1.9 Yes DT073 20030207 8:34:00 AM LaVelle, L Keith, K 0 1 6.7 Yes DT045 20030207 9:17:00 AM LaVelle, L Keith, K 0 2 8.2 Yes DT047 20030207

9:46:00 AM LaVelle, L Keith, K 0 4 10.3 Yes DT049 20030207 10:13:00 AM LaVelle, L Keith, K 0 4 10.5 No DT081 20030207 10:45:00 AM LaVelle, L Keith, K 0 4 10.8 Yes DT077 20030207 11:18:00 AM LaVelle, L Keith, K 0 4 11.4 Yes DT051 20030207 7:31:00 AM Ruell, E Ruelle, M 0 1 1.9 Yes DT043 20030207 8:27:00 AM Ruell, E Ruelle, M 0 1 6.7 Yes DT061 20030207 8:52:00 AM Ruell, E Ruelle, M 0 1 6.2 Yes DT121 20030207 9:39:00 AM Ruell, E Ruelle, M 0 3 10.3 Yes DT065 20030207 10:17:00 AM Ruell, E Ruelle, M 0 3 10.5 No DT111 20030207 10:45:00 AM Ruell, E Ruelle, M 0 3 10.8 No DT117 20030207 11:16:00 AM Ruell, E Ruelle, M 0 3 11.4 Yes RA040 20030214 9:28:00 AM McEwan, J Gartland, R 3 1 11.8 Yes RA038 20030214 9:51:00 AM McEwan, J Gartland, R 3 1 Yes RA036 20030214 10:12:00 AM McEwan, J Gartland, R 2 1 Yes RA034 20030214 10:37:00 AM McEwan, J Gartland, R 2 1 Yes RA032 20030214 10:55:00 AM McEwan, J Gartland, R 1 2 Yes RA030 20030214 11:15:00 AM McEwan, J Gartland, R 0 2 Yes RA068 20030214 12:23:00 PM McEwan, J Gartland, R 0 2 Yes

Birds Observed during Survey of February 2003
Transect Date Bird D Along Total D 0-10 D 10-25 D > 25 Flyover Bird Notes DT137 20030202 SAGS 0 1 - - - - DT137 20030202 SAGS 150 1 - - Yes - DT137 20030202 HOLA 250 1 - - Yes - DT141 20030202 SAGS 50 1 - - Yes - DT141 20030202 SAGS 100 1 - - Yes - DT139 20030202 SAGS 0 1 - - Yes - DT139 20030202 SAGS 0 1 - - Yes - DT139 20030202 HOLA 200 5 - - Yes - DT139 20030202 SAGS 150 1 Yes - - - DT139 20030202 HOLA 150 1 - - Yes - DT149 20030202 HOLA 150 1 - - Yes - DT155 20030202 HOLA 50 2 - Yes - - DT155 20030202 SAGS 150 1 Yes - - - DT155 20030202 SAGS 50 1 - - Yes - DT097 20030202 HOLA 50 1 - - Yes - DT125 20030202 HOLA 200 1 - - Yes - GV020 20030203 SAGS 150 1 - Yes - - GV020 20030203 SAGS 150 2 - - Yes - GV020 20030203 SAGS 200 1 - - Yes - GV020 20030203 HOLA 250 1 - - Yes - GV020 20030203 LCTH 250 1 - - Yes - GV024 20030203 HOLA 0 2 - - - Yes GV024 20030203 SAGS 50 1 - - Yes - GV024 20030203 HOLA 50 1 - - Yes - GV024 20030203 HOFI 150 1 - - Yes - GV024 20030203 HOLA 150 3 - - Yes - GV002 20030203 HOLA 50 1 - - Yes - GV002 20030203 HOLA 100 2 - - Yes - GV002 20030203 HOLA 200 1 - - Yes - GV002 20030203 HOLA 150 1 - - Yes - GV034 20030203 HOLA 50 3 - - Yes - GV034 20030203 LOSH 150 1 - - Yes - GV034 20030203 HOLA 200 1 - - Yes - GV034 20030203 VERD 250 1 - - Yes - GV036 20030203 SAGS 0 1 Yes - - - GV036 20030203 HOFI 50 1 - - Yes - GV036 20030203 SAGS 150 1 Yes - - - grayer than usual GV012 20030203 HOLA 0 1 - - Yes - GV012 20030203 HOLA 150 1 - - Yes - GV012 20030203 HOLA 150 1 - - - Yes JB033 20030204 HOLA 0 1 - Yes - - JB033 20030204 CORA 50 1 - - Yes - JB033 20030204 SAGS 100 1 Yes - - - JB033 20030204 SAGS 200 3 - - Yes - JB029 20030204 SAGS 0 1 - - Yes - JB029 20030204 SAGS 125 1 - - Yes - JB029 20030204 SAGS 175 1 - - Yes - JB029 20030204 HOLA 200 1 - - Yes - JB027 20030204 SAGS 150 1 Yes - - - JB027 20030204 SAGS 150 1 - Yes - - JB027 20030204 SAGS 200 1 - - Yes - JB027 20030204 WCSP 150 8 - - Yes - JB025 20030204 UNK SP 50 2 - Yes - - JB025 20030204 SAGS 150 1 - - Yes - JB023 20030204 SAGS 50 1 - - Yes - JB023 20030204 SAGS 200 2 - - Yes - JB023 20030204 UNK SP 100 1 - Yes - - JB021 20030204 HOLA 200 5 - - Yes - JB019 20030204 HOLA 100 1 - - - Yes JB019 20030204 HOLA 200 1 - - - Yes JB019 20030204 CORA 200 1 - - - Yes RA050 20030204 SAGS 0 1 - - Yes - RA050 20030204 VERD 50 1 - - Yes - RA048 20030204 HOLA 50 1 - - Yes - RA048 20030204 ROWR 150 1 - - Yes - RA048 20030204 HOLA 200 1 - - Yes - RA046 20030204 SAGS 150 1 - Yes - - RA046 20030204 SAGS 150 1 - - Yes - RA046 20030204 ROWR 200 1 Yes - - - RA044 20030204 ROWR 0 1 - - Yes - RA044 20030204 HOLA 50 2 Yes - - - RA044 20030204 VERD 50 1 - - Yes - RA044 20030204 HOLA 50 1 - - Yes - RA044 20030204 HOLA 200 1 - - - Yes RA042 20030204 HOLA 0 1 - - Yes - RA042 20030204 ROWR 150 1 Yes - - - RA042 20030204 SAGS 100 1 Yes - - - RA042 20030204 HOFI 150 1 - - - Yes RA042 20030204 HOLA 200 2 - Yes - - RA042 20030204 SAPH 250 1 - - Yes - RA076 20030204 HOLA 0 3 - Yes - - RA076 20030204 HOLA 50 8 - - - Yes RA076 20030204 SAGS 100 1 Yes - - - RA074 20030204 HOLA 0 1 - Yes - - RA074 20030204 HOLA 100 1 - Yes - - RA074 20030204 HOLA 200 1 - - Yes - RA074 20030204 SAGS 200 1 - - Yes - RA074 20030204 HOLA 250 1 - - Yes - RA074 20030204 HOLA 100 1 - - Yes - RA006 20030205 SAGS 250 1 - Yes - - RA006 20030205 HOLA 150 1 - - Yes - RA006 20030205 HOLA 250 2 - - Yes - RA006 20030205 SAGS 100 1 - - Yes - RA008 20030205 SAGS 50 1 - - Yes - RA008 20030205 UNK SP 150 1 - Yes - - RA008 20030205 CORA 250 2 - - - Yes RA012 20030205 CORA 50 1 - - Yes - RA012 20030205 HOLA 150 1 - Yes - - RA012 20030205 HOLA 50 2 - - Yes - RA012 20030205 CORA 150 2 - - Yes - RA014 20030205 HOLA 100 1 - - Yes - RA014 20030205 HOLA 150 2 - - Yes - RA018 20030205 SAGS 200 1 - Yes - - RA058 20030205 HOLA 0 1 - Yes - - RA058 20030205 HOLA 50 1 - - Yes - RA058 20030205 BTJR 0 1 Yes - - - RA022 20030205 SAGS 150 1 - - Yes - RA022 20030205 HOLA 150 1 -

Yes - - RA022 20030205 HOLA 200 1 - - Yes - RA080 20030205 BTJR 150 1 Yes - - - RA080 20030205 ROWR 250 1 - - Yes - GR027 20030206 HOLA 50 1 - - Yes - GR031 20030206 SAGS 100 1 - Yes - - GR033 20030206 SAGS 50 4 - Yes - - GR033 20030206 SAGS 100 3 - - Yes - GR015 20030206 SAGS 150 3 - Yes - - GR015 20030206 SAGS 150 5 - - Yes - GR015 20030206 UNK 50 1 - - Yes - JB003 20030206 SAGS 0 1 - - Yes - JB003 20030206 LOSH 50 1 - - Yes - JB003 20030206 SAGS 100 2 - - Yes - JB003 20030206 SAGS 150 1 - Yes - - JB003 20030206 SAGS 250 1 Yes - - - JB003 20030206 UNK 150 1 - - Yes - JB003 20030206 SAGS 250 1 - Yes - - JB003 20030206 SAGS 250 1 - - Yes - JB001 20030206 SAGS 50 1 - - Yes - JB001 20030206 SAGS 50 1 - - Yes - JB001 20030206 SAGS 100 1 - - Yes - JB001 20030206 SAGS 200 1 - - Yes - JB001 20030206 SAGS 250 1 - - Yes - JB007 20030206 SAGS 0 1 - - Yes - JB007 20030206 HOLA 0 1 - - Yes - JB007 20030206 SAGS 50 2 - - Yes - JB007 20030206 HOLA 50 1 - - - Yes JB007 20030206 HOLA 50 1 - Yes - - B007 20030206 HOLA 100 1 - Yes - - JB007 20030206 SAGS 250 3 - - Yes - JB037 20030206 SAGS 100 1 - Yes - - JB037 20030206 SAGS 100 1 - - Yes - JB037 20030206 SAGS 150 1 - Yes - - JB037 20030206 SAGS 150 1 - - Yes - JB037 20030206 SAGS 250 1 - - Yes - JB037 20030206 HOLA 150 1 - - Yes - JB043 20030206 SAGS 0 1 Yes - - - JB043 20030206 SAGS 0 1 - Yes - - JB043 20030206 SAGS 100 2 - Yes - - DT023 20030207 UNK 150 1 - - Yes - Blackish wings DT023 20030207 UNK SP 0 4 - - Yes - Flashing white patches DT073 20030207 HOFI 200 1 - - Yes - DT045 20030207 HOLA 100 1 - - Yes - DT045 20030207 VERD 100 2 - - Yes - DT045 20030207 SAGS 100 1 - - Yes - DT045 20030207 HOLA 150 5 - - Yes - DT045 20030207 SAGS 150 1 - - Yes - DT047 20030207 HOLA 100 3 - - Yes - DT047 20030207 SAGS 100 1 - - Yes - DT047 20030207 HOLA 150 4 - - Yes - DT081 20030207 HOLA 100 2 - Yes - - DT077 20030207 HOLA 100 2 - - Yes - DT051 20030207 HOLA 0 1 Yes - - - DT051 20030207 HOLA 150 1 - - Yes - DT051 20030207 HOLA 150 1 - Yes - - DT043 20030207 SAGS 0 1 - Yes - - DT043 20030207 HOLA 250 1 - - Yes - DT061 20030207 SAGS 150 11 Yes - - - DT061 20030207 SAGS 250 1 - Yes - - DT061 20030207 LOSH 0 1 - - Yes - DT121 20030207 SAGS 150 1 - - Yes - DT121 20030207 HOLA 50 2 Yes - - - DT117 20030207 SAGS 200 2 - - Yes - DT117 20030207 CORA 100 1 Yes - - - RA040 20030214 HOLA 200 3 - - Yes - RA040 20030214 SAGS 100 1 - Yes - - RA040 20030214 HOLA 0 2 - Yes - - RA040 20030214 BUOW 0 1 - - Yes - RA038 20030214 UNK SP 50 2 Yes - - - RA038 20030214 SAGS 150 1 - - Yes - RA038 20030214 HOLA 250 2 Yes - - - RA036 20030214 HOLA 0 1 - Yes - - RA036 20030214 HOLA 200 1 - - Yes - RA034 20030214 SAGS 25 1 - - Yes - RA034 20030214 SAGS 220 1 - - Yes - RA032 20030214 UNK 0 1 - - Yes - RA032 20030214 SAGS 50 1 - - Yes - RA032 20030214 SAGS 150 1 - - Yes - RA030 20030214 HOLA 100 10 - - Yes - RA068 20030214 ROWR 0 1 - - Yes - RA068 20030214 HOLA 50 1 - Yes - - RA068 20030214 HOLA 225 1 - - Yes - RA068 20030214 ROWR 250 1 - - Yes -

Part VI

The following Incidental Sightings were made by members of the Desert Monitoring Team while engaged in other monitoring activities (besides birds). The only species of birds noted here are raptors, shrikes, and thrashers.

Easting Northing Elevation Date Time Species Observer Management Area Observation 419029 3930650 28-Nov-01 BUOW Ruelle, M El Paso Wilderness (All) Live sighting 422250 3933750 28-Nov-01 LOSH Ruelle, M El Paso Wilderness (All) Live sighting 454690 3914450 01-Dec-01 BUOW Weigand, J Golden Valley (All) Burrow 454690 3914450 01-Dec-01 BUOW Weigand, J Golden Valley (All) Live sighting 457716 3919723 01-Dec-01 BUOW Weigand, J Golden Valley (All) Live sighting 457532 3920137 01-Dec-01 BUOW Weigand, J Golden Valley (All) Live sighting 457532 3920137 01-Dec-01 BUOW Weigand, J Golden Valley (All) Burrow 457716 3919723 01-Dec-01 BUOW Weigand, J Golden Valley (All) Burrow 435106 3945555 02-Dec-01 1:50:00 PM PRFA Weigand, J Route 178 Live sighting 494534 3847276 03-Dec-01 11:39:00 AM LOSH Weigand, J Stoddard Valley Live sighting 424445 3906633 04-Dec-01 LOSH Weigand, J Rands Live sighting 471626 3902237 08-Dec-01 2:43:00 PM LOSH Ruelle, M Grass Valley (All) Live sighting 455366 3915703 09-Dec-01 11:00:00 AM LCTH Weigand, J Golden Valley (All) Live sighting 475691 3902142 09-Dec-01 3:00:00 PM LOSH Ruelle, M Grass Valley (All) Other 473967 3902373 09-Dec-01 4:00:00 PM LOSH Ruelle, M Grass Valley (All) Live sighting 474083 3902905 09-Dec-01 4:14:00 PM LCTH Ruelle, M Grass Valley (All) Live sighting 474083 3902905 09-Dec-01 4:14:00 PM LCTH Ruelle, M Grass Valley (All) Live sighting 474083 3902905 09-Dec-01 4:14:00 PM LCTH Ruelle, M Grass Valley Heard only 421614 3906048 10-Dec-01 7:30:00 AM LCTH Ruelle, M Desert Tortoise (All) Heard only 416229 3896048 10-Dec-01 11:00:00 AM BUOW Ruelle, M Desert Tortoise (All) Burrow 416229 3896048 10-Dec-01 11:00:00 AM BUOW Ruelle, M Desert Tortoise (All) Live sighting 471041 3900868 17-Dec-01 2:00:00 PM RTHA Keith, K Grass Valley (All) Live sighting 470546 3901487 17-Dec-01 2:50:00 PM BUOW Keith, K Grass Valley (All) Live sighting 420223 3931277 20-Dec-01 9:30:00 AM BUOW Ruelle, M El Paso Wilderness (All) Live sighting 420223 3931277 20-Dec-01 9:30:00 AM BUOW Ruelle, M El Paso Wilderness (All) Burrow 475200 3908400 22-Jan-02 LCTH Ruelle, M Grass Valley (All) Heard only 470890 3907201 22-Jan-02 LCTH Ruelle, M Grass Valley (All) Live sighting 446163 3901979 25-Jan-02 12:28:00 PM LOSH Weigand, J Grass Valley (All) Live sighting 470051 3904546 25-Jan-02 2:21:00 PM LOSH Weigand, J Grass Valley (All) Live sighting 470725 3904617 25-Jan-02 5:18:00 PM LCTH Weigand, J Grass Valley (All) Heard only 451988 3915371 29-Jan-02 LCTH Ruelle, M Golden Valley (All) Heard only 416250 3928365 31-Jan-02 RTHA Ruelle, M El Paso Wilderness (All) Live sighting 415263 3927138 01-Feb-02 11:00:00 AM RTHA Ruelle, M El Paso Wilderness (All) Live sighting 471116 3903815 17-Feb-02 8:30:00 AM LCTH Ruelle, M Grass Valley (All) Heard only 472416 3903069 17-Feb-02 9:45:00 AM LCTH Ruelle, M Grass Valley (All) Heard only 472416 3903069 17-Feb-02 9:45:00 AM LOSH Ruelle, M Grass Valley (All) Live sighting 474462 3908639 18-Feb-02 2:55:00 AM LCTH Ruelle, M Grass Valley (All) Heard only 448007 3916131 18-Feb-02 7:50:00 AM LOSH Ruelle, M en route to Golden Valley Live sighting 451646 3915160 18-Feb-02 8:20:00 AM LCTH Ruelle, M Golden Valley Heard only 451593 3915330 18-Feb-02 11:03:00 AM LCTH Ruelle, M Golden Valley (All) Heard only 450842 3928052 21-Feb-02 10:30:00 AM LCTH Ruelle, M Spangler Hills Heard only 434550 3913680 22-Feb-02 11:50:00 AM LCTH Ruelle, M Rands Live sighting 457685 3934539 25-Feb-02 11:09:00 AM LCTH Ruelle, M Spangler Hills Heard only 416398 3897164 26-Feb-02 1:53:00 PM NOHA Ruelle, M Desert Tortoise (All) Live sighting 416398 3897164 26-Feb-02 1:53:00 PM NOHA Ruelle, M Desert Tortoise (All) Live sighting 442938 3911511 27-Feb-02 10:48:00 AM RTHA Ruelle, M Red Mountain Live sighting 442938 3911511 27-Feb-02 10:48:00 AM RTHA Ruelle, M Red Mountain Live sighting 410036 3929319 28-Feb-02 11:00:00 AM LOSH Keith, K Jawbone Live sighting 447823 3937185 18-Apr-02 8:00:00 AM LCTH McAllister, H Spangler Hills Open Area Heard only 466500 3906380 04-May-02 7:15:00 AM LCTH Weigand, J Grass Valley (All) 465900 3906600 04-May-02 7:24:00 AM LCTH Weigand, J Grass Valley (All) 465700 3905250 04-May-02 8:37:00 AM LCTH Weigand, J Grass Valley (All) 470430 3907798 05-May-02 10:23:00 AM LCTH Weigand, J Grass Valley (All) 469688 3908029 05-May-02 10:38:00 AM LCTH Weigand, J Grass Valley (All) 469688 3908029 05-May-02 10:38:00 AM LCTH Weigand, J Grass Valley (All) 433500 3918750 06-May-02 6:01:00 AM LCTH Weigand, J Rand Mountains Heard only 435000 3918750 06-May-02 7:17:00 AM LCTH Weigand, J Rand Mountains 435750 3917250 06-May-02 7:38:00 AM LCTH Weigand, J Rand Mountains Live sighting 433500 3917250 06-May-02 9:29:00 AM RTHA Weigand, J Rand Mountains Live sighting 429829 3915934 07-May-02 LCTH Weigand, J Rand

Mountains 410250 3933000 08-May-02 5:57:00 AM LCTH Weigand, J Jawbone ACEC 409621 3933138 08-May-02 6:52:00 AM LCTH Weigand, J Jawbone ACEC 412500 3930000 08-May-02 9:18:00 AM RTHA Weigand, J Jawbone ACEC Live sighting 413250 3931500 08-May-02 10:07:00 AM LCTH Weigand, J Jawbone ACEC 419250 3897000 12-May-02 6:50:00 AM LCTH Weigand, J Desert Tortoise (All) Heard only 418500 3897750 12-May-02 7:16:00 AM LCTH Weigand, J Desert Tortoise (All) Heard only 417750 3897750 12-May-02 7:42:00 AM LCTH Weigand, J Desert Tortoise (All) Heard only 453569 3838230 12-May-02 12:32:00 PM LCTH Ruelle, M El Mirage (All) Live sighting 454415 3838239 12-May-02 12:50:00 PM LCTH Ruelle, M El Mirage (All) Live sighting 453569 3838124 12-May-02 1:09:00 PM LCTH Ruelle, M El Mirage (All) Live sighting 453569 3838124 12-May-02 1:09:00 PM LCTH Ruelle, M El Paso Wilderness (All) Live sighting 453569 3838124 12-May-02 4:53:00 PM LCTH Ruelle, M El Mirage (All) Heard only 453569 3838124 12-May-02 4:53:00 PM LCTH Ruelle, M El Mirage (All) Live sighting 424699 3907829 13-May-02 LOSH Weigand, J Rand Mountains 429000 3910500 13-May-02 7:20:00 AM LCTH Weigand, J Rand Mountains Heard only 453382 3833783 13-May-02 12:33:00 PM BUOW Ruelle, M El Mirage (All) Live sighting 410097 3919995 28-Aug-02 1:56:00 PM LOSH Keith, K Jawbone ACEC Live sighting 414100 3939600 04-Sep-02 10:18:00 AM LCTH Keith, K Jawbone ACEC Heard only 409816 3912317 09-Sep-02 11:48:00 AM RTHA Ruelle, M Red Rock Live sighting 410600 3937200 01-Oct-02 11:18:00 AM LCTH Ruelle, M Jawbone ACEC Heard only 408179 3920459 03-Oct-02 3:26:00 PM LOSH Ruelle, M Dove Springs Open Area Live sighting 469135 3905575 11-Oct-02 10:45:00 AM LCTH Ruelle, M Grass Valley (All) Live sighting 468000 3910500 11-Oct-02 1:05:00 PM LCTH Ruelle, M Grass Valley (All) Heard only 407600 3912500 15-Oct-02 9:57:00 AM LCTH Keith, K Jawbone ACEC Heard only 407409 3920914 22-Oct-02 3:43:00 AM LOSH Ruelle, M Dove Springs Open Area Live sighting 434686 3917944 30-Oct-02 7:15:00 AM LCTH Ruelle, M Rand Mountains Heard only 430532 3916470 30-Oct-02 9:31:00 AM LCTH Ruelle, M Rand Mountains Heard only 414429 3900554 01-Nov-02 2:23:00 PM LCTH Ruelle, M Desert Tortoise (All) Heard only 461361 3901154 21-Nov-02 LCTH Keith, K Cuddeback Lake Heard only 458364 3909943 22-Nov-02 LCTH Ruelle, M Cuddeback Lake Live sighting 452372 3903057 22-Nov-02 LOSH Ruelle, M Cuddeback Lake Live sighting 418489 3894877 0 03-Dec-02 7:21:00 AM LCTH Ruelle, M Desert Tortoise (All) Heard only 417626 3896253 0 03-Dec-02 7:53:00 AM LCTH Ruelle, M Desert Tortoise (All) Heard only 411447 3932269 0 04-Dec-02 7:40:00 AM LCTH Keith, K Jawbone ACEC North Live sighting 413427 392989 04-Dec-02 11:14:00 AM LOSH Ruelle, M Jawbone ACEC Live sighting 435835 3917159 05-Dec-02 LCTH Ruelle, M Fremont Valley Heard only 435789 3916619 05-Dec-02 6:55:00 AM LCTH Ruelle, M Fremont Valley Live sighting 435091 3917335 0 05-Dec-02 8:04:00 AM LCTH Ruelle, M Rand Mts/Fremont Valley Heard only 433400 3917175 0 05-Dec-02 9:19:00 AM LCTH Ruelle, M Rand Mts/Fremont Valley Heard only 438254 3932227 05-Dec-02 10:43:00 AM RTHA Keith, K Highway 395 Live sighting 466602 3904428 0 06-Dec-02 8:27:00 AM LCTH Ruelle, M Grass Valley (All) Heard only 465688 3909073 06-Dec-02 11:13:00 AM RTHA Ruelle, M Grass Valley (All) Live sighting 466100 3911600 10-Dec-02 7:45:00 AM RTHA Keith, K Grass Valley (All) Live sighting 469868 3902626 0 10-Dec-02 9:40:00 AM LCTH Keith, K Grass Valley (All) Heard only 468801 3905886 0 10-Dec-02 11:25:00 AM LCTH Keith, K Grass Valley (All) Heard only 429420 3916596 11-Dec-02 11:46:00 AM RTHA Keith, K Fremont Valley Live sighting 417606 3938646 13-Dec-02 9:30:00 AM RTHA Keith, K Highway 14 Live sighting 396152 3928287 1719 14-Jan-03 5:08:45 PM RTHA Ruelle, M Jawbone ACEC PM RTHA Ruelle, M Jawbone ACEC Live sighting 412380 3935567 0 21-Jan-03 9:05:00 AM GOEA Keith, K Jawbone ACEC North Live sighting 450849 3905088 0 30-Jan-03 12:55:36 PM LCTH McEwan, J Red Mountain Interim Closure Live sighting 406101 3904209 637 30-Jan-03 2:32:17 PM RTHA Ruelle, M Jawbone ACEC Live sighting 398638 3913227 1167 31-Jan-03 12:03:40 PM RTHA Ruelle, M Jawbone ACEC Live sighting 451191 3915815 955 03-Feb-03 9:51:30 AM LCTH Keith, K Golden Valley Wild Heard only 453998 3913067 791 03-Feb-03 10:41:04 AM LOSH Ruelle, M Golden Valley Wild Live sighting 453980 3913823 802 03-Feb-03 11:08:08 AM LCTH Keith, K Golden Valley Wild Heard only 435336 3934802 842 04-Feb-03 12:30:41 PM RTHA Ellis, S Other Live sighting 436516 3917012 798 05-Feb-03 8:35:06 AM LCTH Keith, K Rand Mts/Fremont V Heard only 435870 3937868 760 05-Feb-03 11:31:25 AM GOEA Ruelle, M Other Live sighting 414394 3935107 0 06-Feb-03 7:16:00 AM LOSH Axelson, K Jawbone ACEC North Live sighting 417495 3897669 722 07-Feb-03 10:28:01 AM LCTH Morgan Ruelle Desert Tortoise NA Nest 417495 3897669 722 07-Feb-03 10:28:01 AM LCTH Morgan Ruelle Desert Tortoise NA Live sighting 465810 3969058 0 10-Feb-03 11:54:59 AM LOSH McEwan, J Great Falls ACEC Live sighting 445982 3913657 0 18-Feb-03 12:24:05 PM RTHA McEwan, J Red Mountain Live sighting 418305 3933571 0 21-Mar-03 8:13:00 AM LCTH Ruelle, M Freeman Gulch Heard only 419178 3933716 0

03-Apr-03 8:40:00 AM LCTH Ruelle, M Freeman Gulch Live sighting 429207 3909753 720 16-Apr-03 11:39:13 AM GOEA Gartland, R Rand Mts/Fremont V Live sighting 427137 3905042 912 16-Apr-03 12:55:36 PM LCTH Gartland, R Rand Mts/Fremont V Live sighting 461492 3910403 0 17-Apr-03 8:35:00 AM LOSH Ruelle, M Cuddeback Lake Live sighting 427552 3906249 946 23-Apr-03 4:49:30 PM GOEA LAURA-SCA Rand Mts/Fremont V 418533 3934271 0 28-Apr-03 4:30:00 PM LCTH Keith, K Freeman Gulch Live sighting 414098 3935272 0 05-May-03 10:00:00 AM LCTH Ruelle, M Jawbone ACEC North Live sighting 418108 3895089 712 12-May-03 1:24:25 PM LCTH Gartland, R Desert Tortoise NA Live sighting 469514 3907233 1087 13-May-03 8:05:02 AM LCTH Gartland, R Grass Valley Wild Live sighting 469437 3907528 1103 13-May-03 10:43:34 AM LOSH Gartland, R Grass Valley Wild Live sighting 419260 3899442 0 16-May-03 10:30:00 AM LCTH Gartland, R Desert Tortoise (All) 419483 3898425 0 16-May-03 10:40:00 AM LCTH Gartland, R Desert Tortoise (All) 627939 3713014 360 23-May-03 1:50:11 PM PRFA Gartland, R Salt Creek Live sighting 418750 3933507 0 04-Jun-03 9:05:00 AM BUOW Harris, J Freeman Gulch Other 418750 3933507 0 04-Jun-03 9:05:00 AM BUOW Harris, J Freeman Gulch Burrow 418750 3933507 0 04-Jun-03 9:05:00 AM BUOW Harris, J Freeman Gulch Live sighting 428738 3916681 619 21-Jun-03 9:47:35 AM RTHA Gartland, R Other Area Live sighting 429828 3916361 634 21-Jun-03 10:42:54 AM LCTH Gartland, R West Rands ACEC Live sighting 430698 3911234 739 21-Jun-03 11:11:10 AM LCTH Gartland, R West Rands ACEC Live sighting 472695 3874340 586 26-Jun-03 3:01:38 PM LCTH Weigand, J Harper Dry Lake Live sighting 426548 3898527 868 27-Jun-03 5:15:40 PM RTHA Gartland, R Rand Mts/Fremont V Live sighting 431860 3918964 689 01-Jul-03 9:05:44 AM LCTH Gartland, R Rand Mts/Fremont V Live sighting 431862 3918964 691 01-Jul-03 9:09:17 AM LOSH Gartland, R Rand Mts/Fremont V Live sighting 428379 3917865 625 01-Jul-03 12:38:09 PM BUOW Gartland, R Rand Mts/Fremont V Live sighting 424566 3908135 648 02-Jul-03 9:40:46 AM LOSH Gartland, R West Rands ACEC Live sighting 424602 3908071 651 02-Jul-03 9:45:19 AM LCTH Gartland, R West Rands ACEC Live sighting 425158 3903699 870 02-Jul-03 11:51:11 AM LOSH Gartland, R West Rands ACEC Live sighting 425361 3904183 851 02-Jul-03 12:07:40 PM LOSH Gartland, R West Rands ACEC Live sighting 425207 3903811 864 08-Jul-03 9:47:51 AM LCTH Gartland, R West Rands ACEC Live sighting 426875 3905123 889 08-Jul-03 11:07:40 AM LOSH Gartland, R West Rands ACEC Live sighting 434887 3905317 1109 08-Jul-03 1:08:28 PM LCTH Gartland, R Rand Mts/Fremont V Live sighting